HAMLINE STUDIES IN MUSICOLOGY

Edited by Ernst Krenek

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HAMLINE UNIVERSITY
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PREFACE

(The Composer and Musicology, with autobiographical remarks of the editor)

In Willi Apel's article on Musicology in the Harvard Dictionary[1] we read:

> "If we interpret musicology as research work in music, then it denotes an activity . . . which is bent upon the discovery of unknown or obscure matters, an activity which is comparable to that of the research-chemist, as opposed to the 'commercial chemist' who makes the discoveries of his colleagues available to the public for consumption. The musicologist, then, is the pioneer of music study, the explorer who is equipped with the same zest which spurs and guides every discoverer, whether he sets out to find the North Pole, a new chemical element or a new mathematical truth. If the result of his research is valid and important, it will, sooner or later, be accepted into general usage, in other words, it will change from the field of musicology into the domain of the theorist, the essayist, the biographer, the performer, and perhaps even the creative artist."

We are of the opinion that Willi Apel is entirely too modest in visualizing the usefulness of musicology for the creative artist as a rather remote possibility. Of all the individuals engaged in the widely diversified branches of music it is probably contemporary composers that will be found among those most vitally interested in, and best equipped with understanding of musicological thought. Agreeing as they are with Apel in that musicology is bound to benefit the creative artist, many of them have a genuine and sincere desire of partaking of the labors of their colleagues in the field of musicological research. The present collection of papers corroborates, as we hope, this statement. The authors of these papers are young American composers of remarkable talents, which at least two of them have already demonstrated in a substantial number of works with which they have earned public recognition. Their researches deserve to be classified as musicological work according to Apel's definition, for, as the reader will notice, they are "bent upon the discovery of unknown or obscure matters", their work has not the character of that of the "commercial chemist", as it does not make the discoveries of others available for public consumption, and I gladly testify that they are possessed by the "same zest which spurs and guides every discoverer".

The composer setting out on his venture in musicology does so not because he thinks that he could do better than the "professional" musicologists, but because he finds himself stimulated by their work to make a contribution for which he feels to be particularly qualified. Creative musicians have become articulate about their trade at a relatively late state of music history. To my knowledge Claudio Monteverdi was the first to give voice to his aesthetic tenets in his famous controversy with Artusi and elsewhere.[2] Otherwise the 17th and 18th cen-

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[1] Willi Apel, Harvard Dictionary of Music, 1944, p.474. Reprinted by permission of the publishers: Harvard University Press, Cambridge, Mass.

[2] Cf. the prefaces to the Fifth Book of Madrigals (1605) (Complete Edition, vol.V), to the Scherzi musicali (1607) (Compl. Ed., vol. X) and to the Madrigali guerrieri ed' amorosi (1638) (Compl. Ed., vol. VIII).

turies have not seen many important literary utterances by composers, except for Jean Philippe Rameau's work[3] which was of singular significance indeed. It is only in the 19th century that composers began to indulge in prose writing at an ever increasing rate, so that some of them, like Richard Wagner, may be considered equally at home in both media, music and literature. Their writings were mainly concerned with problems of general aesthetics and the position of music among the other arts and in contemporary civilization, as evidenced by the literary output of Robert Schumann, Wagner and others. Only few treatises written by composers dealt with theory proper, like Vincent D'Indy's Cours de Composition. More were concerned with practical matters, such as orchestration[4] and conducting[5]. Music theory was chiefly cultivated by a type of scholars who did not claim to be composers of any consequence, but generally speaking would not come under the above definition of musicologists either, with exception of Hugo Riemann. In their books on theory, men like Bellermann, Jadassohn, Gedalge and others were hardly "bent upon the discovery of unknown or obscure matters" (which perhaps is not the business of such books), but rather occupied with elaborating on the two standard treatises on harmony (Rameau) and counterpoint (Fux[6]) and bringing their teachings up to date.

It was for composers of our own time to turn their attention to music theory in an unprecedented measure. Arnold Schönberg stands at the beginning of this trend[7], Paul Hindemith[8] and this writer[9] have more recently contributed to the field. The reason for this increased interest in music theory on the part of composers is obviously to be found in the substantial mutations that the idiom of music underwent in the beginning of this century. Tho "professional" theorists of the 19th century type did not seem to be able or willing to furnish meaningful and constructive interpretation of the new phenomena, and therefore the composers felt a growing urge of taking matters in their own hands and essaying a little explaining of their own.

The propensity for theoretical reasoning has caused several of the composers who were particularly involved in those mutations of the idiom to approach musicology. It is interesting to notice that many of Schönberg's pupils and friends[10] were members of the distinguished Institute for Music History at the University of Vienna and contributed significantly to the Denkmäler der Tonkunst in Oesterreich, that monument of scholarship that the great Guido Adler erected for himself. As far as Europe was concerned, the association of composers and musicologists as seen at the University of Vienna was an exception rather than a rule. Conditions for such cooperation are more favorable in this country since at many American institutions of higher learning music in all its aspects has acquired a respectable place among the humanities where it rightfully belongs. The interest of our universities in providing their graduates with some practically usable vocational background obliges the music departments to stress in their curricula the character of music as a living and changing factor of contemporary civilization so

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[3]Traité d'harmonie, 1722.
[4]Hector Berlioz, Traité d'instrumentation, n.d.
[5]Richard Wagner, Ueber das Dirigieren, 1869.
[6]Johann Joseph Fux, Gradus ad Parnassum, 1725.
[7]Arnold Schönberg, Harmonielehre, 1911.
[8]Paul Hindemith, The Craft of Musical Composition, 1941-42.
[9]Ernst Krenek, Studies in Counterpoint, 1940.
[10]Anton Webern, Egon Wellesz, Paul A. Pisk, to name only a few.

that they may not overrate the value of purely historical orientation. On the other hand, the close association which the music departments entertain (or should entertain) especially with those of philosophy, history and classical languages saves them from becoming mere trade schools. Thus the music department of the American university is a particularly favorable place for the composer interested in musicology.

In order to clarify the nature of the interest in musicology of the "progressive" composer it might be best to sketch briefly the history of the present publication, if a digression into autobiography may be allowed. Due to the circumstances of my musical training in which little attention was paid to historical orientation although I too studied at the Institute for Music Hisotry in Vienna , I did not become vitally interested in the history of music before I came in closer contact with the disciples of Schönberg living in Vienna about 1930. Even more decisive was the urge of looking for help and justification in my first struggle with the Twelve-Tone Technique on which I had embarked at that time. I felt instinctively that I would be more successful in doing what I tried to do as a composer if I could trace the ideas underlying the Twelve-Tone Technique back to earlier practice and discover that they were a logical expression of general principles governing the music of Western civilization. My then investigations in this respect now appear to me fairly unsystematical, but when I made my first attempt at formulating a theory of new music in a series of lectures given in Vienna in 1936, I was able to quote an example from the Gregorian Chant in order to point out certain similarities with basic procedures of the twelve-tone technique.[11]

Paradoxical as it may seem I settled down to musicological studies with real intensity and consequential earnestness after I was removed from the riches of European archives and had reached this country in 1937. I suppose that I found the atmosphere of the American university much more congenial and favorable to my endeavors than that of the frequently stuffy and bureaucratically entangled European library. Discussion and correspondence with such scholars as George S. Dickinson, Donald N. Ferguson, Richard S. Hill, Edward Lovinsky, Arthur T. Merritt, Gustave Reese, Nicolas Slonimsky, Oliver Strunk and others have greatly furthered my purpose and I am indebted to them for their advice, aid and encouragement which they have always offered in a spirit of sympathy for the composer approaching their special field of learning.

While working on my book on contemporary music[12], my historical interest crystallized mainly around four central ideas:

1. An important relationship seemed to exist bwtween the Twelve-Tone Technique and the Cantus Firmus technique of the Middle Ages. Here as there a given melodic figure was repeated many times throughout a composition, thereby serving in varying degrees as a generator of the thematic material, the individual motivic features of the work.

2. The idea of repetition of small motivic patterns in infinite minute variations, so characteristic of certain procedures of the Twelve-Tone Technique, seemed to have a striking counterpart in some principles of design governing the Gregorian Chant.

3. The problem of "orientation", that is the question as to what kind of an organizational framework is holding together the forms of non-

[11]Ernst Krenek, Ueber Neue Musik, Vienna, 1937, p. 54.
[12]Ernst Krenek, Music Here and Now, 1939.

tonal[13] music was touched off by Richard S. Hill in an article of unusual significance[14]. His inspiration of throwing the concept of "mode" into the discussion of twelve-tone affairs caused a new approach to that concept and extensive study of its position in mediaeval musical thought.

4. The problem of dissonance and consonance, or to put it more generally: of evaluating intervals and interval combinations (chords) in regard to their placement and function in the design of non-tonal music was mainly brought to attention through closer acquaintance with Johannes Okeghem, the great Flemish master of the 15th century, which to this writer was one of the important musical experiences of his life.

The last mentioned problem gained added significance for me in connection with my conducting courses in modal counterpoint. Having been reared in the "modernized" Fux-Bellermann method, new vistas were opened to me when I decided to use the newly published textbook by Jeppesen[15] as point of departure for my own outline. Study of Jeppesen's book on Palestrina[16] and thinking through the issues raised in the lively discussion that followed the publication of Arthur T. Merritt's textbook[17] confirmed my growing suspicion that the style of Palestrina was perhaps too narrow a platform to serve as exclusive basis for the teaching of counterpoint. More thorough acquaintance with other masters of the 16th century, like Orlando di Lasso, Victoria, Gesualdo and others, and theorists like Cerone[18] made it clear to me that Palestrina was a very special phenomenon, his style exhibiting perfection and almost uncanny elegance touching on mannerism in bringing certain aspects of Renaissance thought to an awe-inspiring apex, thereby neglecting other equally significant traits of the period. This opinion has been voiced earlier by commentators like Cecil Gray[19]. I came to the conclusion that the study of modal counterpoint could be made much more profitable especially for the student who strives for a dependable technique in handling non-tonal idioms, if the principles of 15th century composition could be included in his course. The main obstacle standing in the way of such an endeavor was that no analysis of 15th century counterpoint even at a distance approaching Jeppesen's admirable work on Palestrina was available. While the prefaces and comments to the editions of the Codices of Trent in the Austrian Denkmäler dealt mainly with matters of philology, such monographs as van den Borren's "Guillaume Dufay", Gombosi's "Jacob Obrecht", Schmidt-Görg's "Nikolaus Gombert, Leben und Werke" and others shed only dim light on the subject since, most valuable as they were in regard to factual data, critique of styles and general aesthetic appreciation, they treated problems of technique in that none too concise manner typical of artistically

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[13]The term "non-tonal" is here used to designate music whose orientation is based on principles other than the system of the major and minor modes in twelve keys.
[14]Richard S. Hill, Schönberg's Tone-Rows and the Tonal System of the Future, in The Musical Quarterly, Vol. XXII, No. 1, Jan., 1936, 14-37.
[15]Knud Jeppesen, Counterpoint, 1939.
[16]Knud Jeppesen, The Style of Palestrina and the Dissonance, 1927.
[17]Arthur T. Merritt, Sixteenth-Century Polyphony, 1939.
[18]Cf. Ruth Hannas, Cerone, Philosopher and Teacher, in The Musical Quarterly, Vol. XXI, No. 4, Oct., 1935, 408-422.
[19]Cecil Gray, The History of Music, 1935, p. 79.

minded persons not actively engaged in creative processes. Scrutiny of some of the more important mediaeval treatises on theory printed in the well-known Gerbert and Coussemaker collections served only to reveal the fact that theoretical speculation of that period lagged considerably behind the practice of the composers just as it did in other periods. While some musicologists may be inclined to disagree with this opinion, it is nonetheless supported by an authority like Jeppesen[20]. Turning to the music of the 15th century itself, we observed soon that an analysis of the truly significant processes of composition was much harder a nut to crack than the orderly and admirably lucid procedures of Palestrina. The paper by Virginia Seay and especially the study by Russell G. Harris presented in this volume point up the peculiar difficulties of the task and the necessity of introducing a number of new and as yet untried concepts. If I ever shall be able to write a textbook on modal counterpoint including 15th century practice, it will be chiefly possible on the strength of the penetrating studies of these young colleagues of mine.

After having laid down in a modest manual[21] the basic elements of the Twelve-Tone Technique as far as they could conservatively be ascertained on the grounds of then available practice, I turned my attention to the problem of non-tonal orientation as suggested in the Hill article. It was the chief subject matter of a course in contemporary music offered by me at the University of Michigan during the summer session of 1940 and some of the results were made public in an address[22] to the Greater New York Chapter of the American Musicological Society, November 13, 1940. This line of thought was further pursued in an essay "New Developments of the Twelve-Tone Technique"[23]. While the study on cadential formations was guided by the viewpoint that a mode could mainly be ascertained by its final[24], the article for The Music Review indicated in its conclusion[25] the potential usefulness of a more inclusive concept of mode. This concept is defined and demonstrated in the contribution to this volume by Virginia Seay.

As compared with the resources available in the east, the material necessary for research of this kind is scarce indeed in the Twin Cities, a circumstance that discouraged me a great deal upon taking over the direction of the department of music at Hamline University in 1942. I am indebted to the administration of this university and to the fine spirit of cooperation prevailing among my colleagues in the department for making it possible through careful planning to add to our own library a number of relevant items, especially microfilms of mediaeval and Renaissance materials. The principal factor, however, that made the continuation of these studies possible at an unexpected scale was that I soon found myself surrounded by a group of devoted, enthusiastic, resourceful and highly gifted students who did not cease to encourage me in my endeavors and have helped me in clarifying my own thought on the problems outlined above.

Russell G. Harris, of Graymont, Illinois, has studied composition in my courses at the summer sessions of the University of Michigan in 1939 and 1940, where he received his Master of Music degree. After a period of teaching at

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[20] Knud Jeppesen, Counterpoint, p.ix, text and footnote 2.
[21] Ernst Krenek, Studies in Counterpoint, 1940.
[22] Ernst Krenek, A Study of Cadential Formations in Atonal Music.
[23] The Music Review, Vol. IV, No. 2, May 1943, 81-97.
[24] Ibid., p. 82, footnote 4.
[25] Ibid., p. 96f.

Baylor University in Waco, Texas, he joined me at Hamline University in 1943 as my assistant and secretary of the School of Fine Arts. The number of his compositions in many media defies a complete listing in this paper. Several of them have been performed on various occasions, notably at the Festival of the International Society for Contemporary Music in New York, 1940, and in concerts of the Twin Cities Chapter of that organization. Russell G. Harris will assume the position of head of the theory section of the music department at Baylor University in the fall of 1945.

Virginia Seay (Mrs. James Ploeser), of Palo Alto, California, has studied theory and composition under my guidance at Vassar College in 1941 and 1942, at the summer sessions of the University of Wisconsin in 1942 and 1943 and at Hamline University where she received her Master of Arts degree in 1944. Her principal musical works are a string quartet, variations for orchestra, choruses on words by Chaucer, and a composition for small orchestra for which she was awarded a first prize in the 1945 competition of the National Federation of Music Clubs.

Martha Johnson, of Mankato, Minnesota, has studied theory, history of music and piano in my courses at Hamline University from 1942 to 1945. Her compositions include a sonata for piano and a string quartet. The paper presented here was prepared by her in order to earn special departmental honors upon graduation.

The three papers of this volume have grown out of research assignments carried out by their authors in the course of their academic studies. Although the papers were written independently from each other and each of them represents an original effort of its author, it will be observed that they follow a common general line of thought. In each of these papers the Gregorian Chant serves as point of departure: Russell G. Harris puts forth an analysis of the metric conditions of the Chant on the grounds of a novel interpretation of the Solesmes theory; Virginia Seay examines the problem of special modal orientation found in some specimens of the Chant; and Martha Johnson analyzes the principles of design in the Plainsong melodies. The main business of all papers is to investigate in polyphonic music the manifestation of the principles discovered in the three above mentioned aspects of the Chant. Russell G. Harris' study explains how the linguistically conditioned metric principles of the Chant have been transformed into decisive musical factors of the polyphonic design of 15th century music, especially of Dufay and Okeghem. Virginia Seay's paper shows in what manner the special features of modal orientation in the Chant can serve to develop a more inclusive concept of mode that would enhance the understanding of non-tonal polyphonic music; the new interpretation of modality is derived from an analysis of music by Okeghem and De Près and viewed with reference to the theorists of the period, Tinctoris and Glareanus. Martha Johnson points out how some of the principles of Gregorian design have significantly reappeared in the linear phenomena of polyphonic music written with the aid of the Twelve-Tone Technique, thus linking up this latest phase of Western music with its beginning. In spite of the common ground of basic thought, pronounced differences between the three papers in regard to intellectual, temperamental and stylistic approach are plainly observable, a fact that in the opinion of the editor greatly adds to the value of the essays.

It is in order to open the acknowledgments with an expression of thankfulness to the authors for their contributions. Due to the efforts of these friends of mine I am able to submit the present collection of studies with all the modesty be-

fitting composers entering upon the precincts of musicology, but also with a certain amount of pride which I hope the indulgent reader of the following pages will find not without justification.

I wish to express our gratitude and appreciation to Dr. Charles Nelson Pace, President of Hamline University, whose broadmindedness and vision have made possible the publication of this volume.

I also gratefully acknowledge the cooperation of the publishing houses Boosey & Hawkes, Harvard University Press, and G. Schirmer in permitting us to use quotations from various books and scores as examples.

St. Paul, Minnesota,
May 1945

Ernst Krenek, Mus. D.
Dean, School of Fine Arts,
Hamline University

AN ANALYSIS OF THE DESIGN OF THE "CAPUT" MASSES BY DUFAY AND OKEGHEM IN THEIR METRIC AND RHYTHMIC ASPECTS

by

Russell G. Harris

Chapter I

THE METRIC AND RHYTHMIC STRUCTURE OF THE MELODIC LINE
Explained in Terms of the Solesmes Theory of Gregorian Chant

As long as the harmonic idiom of the 17th, 18th and 19th centuries maintained its position as the one vehicle for conveying a composer's expressive intentions, a proper evaluation of the theoretic and aesthetic principles underlying the contrapuntal idiom of mediaeval music could never come to fruition.

The proof of this hypothesis, we believe, may be found by comparing the attitudes taken by certain musicologists of the 19th century[1] in regard to mediaeval music with the opinions of more recent scholars. The former made it a point to have their investigations imply that the early music was primitive man's abortive attempt to produce 19th century chords and chord progressions -- and to regulate them by a scheme of metric-rhythmic constancy; that is, while the purely technical portion of their studies was on the whole remarkably accurate, the conclusions reached in the way of critical comments invariably left the implication that mediaeval music was but a prelude to the real Mount Parnassus -- music in the harmonic idiom. The latter group, however, sought to recapture the music of the Middle Ages in its original setting, without resorting to the somewhat egoistic urge of dwelling on the points in which it might differ from the harmonic conception of music, or even from contemporary music; that is, the music has been allowed to speak for itself as a completed expression. The validity of our hypothesis is born out still further by the comparative ease with which the modern scholar has been able to interpret the well carried out but laboriously explained investigations of 19th century musicologists; in many instances it was the mere shifting of critical judgment from the subjective to the objective that clarified some existing vagaries.

One of the more important contributions to our present-day knowledge of mediaeval music -- and the one exception to the vernacular thought of the time in which it was carried out -- has been the thorough research conducted over a period of nearly 100 years by certain Benedictine Monks of Solesmes (near Le Mans), France. The results of their discoveries, coming to a temporary conclusion in 1931 with the publication of the 16th volume in a series known as the Paléographie Musicale, have caused a tremendous awakening to the expressive potentialities of all early church music in general, and Gregorian Chant in particular. In addition to the decisions which the Solesmes musicologists reached regarding the analysis and performance of Gregorian Chant, an inferential conclusion (perhaps not fully intended, but unmistakable in its inclusion) has caused their labors to take on a highly personalized significance, that of adjudicating the music of any era on its own terms only. To have hinted at a principle that completely nullified the typical 19th century method of musical analysis, and to have developed it under the very eyes of that century, was certainly revolutionary to say the least, for it reduced the music of that century -- and of every century -- to its proper place, with the result that all methods of writing music have become greatly clarified.

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[1] The names of Hugo Riemann, Charles Edouard Henri de Coussenmaker and the editors of the Oxford History of Music figure most prominently in this connection.

Standing on equal footing with the Solesmes contributions, and counterbalancing the more specific problem of interpreting the music of a past age, have been the explorations into new avenues of aesthetic experience by the modern composer, whose works for the most part have produced a new polyphony resulting from the broader contrapuntal practices of Bach and Beethoven down to and through those of Wagner, Franck and Mahler, but reverting to many practices common to the pre-Palestrina era. The composer of today is not only finding value in the techniques of mediaeval music composition that have been brought to his attention by musicologists, but he himself has become actively engaged in dislodging many details that may have remained hidden for years had he chosen to sit by complacently and meditate upon the features characterizing the harmonic idiom. The modern composer is clarifying the music of history by practicing certain manners of composition construction peculiar to a past age and a past idiom. The practical application of these devices is solving many problems pertaining to the more statistical aspect of musicology, and in this way the composer is of assistance to the musicologist who is interested more often than not in the purely documentary phase of the field. Thus, we have a rare collaboration. The composer and the research scholar have joined hands; their consummate knowledge is providing an ever-clearing picture of music both ancient and modern.

As far as we are able to discover, one problem of mediaeval music has come down to us fairly untouched. Few attempts, if any, have been made to explain the strange phenomenon of meter and rhythm arising from the seemingly complex and chaotic designs of 15th century polyphonic music. Much has been accomplished in the way of clarifying notational procedures, transcribing the music into modern notation, verifying manuscripts and suggesting theoretic solutions to the music itself (such scholars as Gustave Reese, Guido Adler, Knud Jeppeson, Willi Apel, Edward Lowinsky and others have made noteworthy contributions in this respect). But the explanations of some musical processes -- such as the one we are about to undertake -- have not particularly engaged the attentions of musicologists. It has been the unavailability of information, along with the interest which a muscial analysis of any hitherto unsolved composition might afford from the practical creative standpoint, that has led us to the presentation of a possible solution of certain 15th century musical complexities.

If we had decided to examine all the works of the 15th century that are extant and available, the task of analyzing every note, every phrase and every manuscript facsimile would have run us into countless years of study. After having carefully inspected several hundred examples of representative music of the period, we discovered that certain metric and rhythmic features were common to all works. We then noticed that in any extended composition these features seemed to be epitomized, as it were. We selected the "Caput" Masses by Guillaume Dufay and Johannes Okeghem not only because they fulfilled the requirements along that line, but the fact that these composers were regarded even by writers of their own time as outstanding and representative, has served likewise to stamp the selection with approval. We were conscious as well of the value springing from a comparison of the treatment of the same cantus, "Caput", by teacher and pupil.[2]

[2]Okeghem is supposed to have studied with Dufay in the year 1450. Cf. Hugo Riemann, Musik Lexikon, 1929, vol. 2, p.1291.
All examples from the "Caput" Masses used in this volume have been taken from from the Denkmäler der Tonkunst in Oesterreich,XIX, Vol. 38, 1912, pp.17-46 (Dufay) and pp. 59-79 (Okeghem) and have been transcribed by omitting barlines and using the treble, alto and bass clefs.

Upon a first and superficial analysis of the separate parts of the Dufay and Okeghem Masses, it became self-evident that certain connections with Gregorian chant existed. Most notable among these were rhythmic groups of two and three beats. It was the characteristic and consistent feature of two- and three-beat groupings that called our attention to the Solesmes Theory of meter and rhythm in Gregorian Chant. But our attempts to apply to the 15th century style the Solesmes Theory as it stood in its more or less restricted formulation came to no practical realization. We were forced to conclude that if the Solesmes Theory could be adapted to the music of the 15th century, it would be necessary to reformulate many of the principles. Turning our attention to the Paléographie Musicale, we were gratified to learn that a broadening of the Solesmes Theory was actually in conformity with Solesmes basic thought, for the principles which we sought were in reality the very ones arrived at by the Solesmes musicologists before they deduced the more specific set of rules to take care of Gregorian Chant. This was but the beginning of innumerable other solutions to 15th century music perplexities which seemed to come about automatically as we continued our search in the direct source.

Therefore, in the first chapter of our analysis of the "Caput" Masses in their metric and rhythmic aspects, we shall endeavor to apply the Solesmes Gregorian Chant Theory to the separate voices of the Masses, and through them to the whole of 15th century polyphonic music. To accomplish this we shall have to restate and condense the Theory; but the restatement and condensation will not change the essential elements of characterization in that Theory. On the other hand, they will merely serve to elucidate the problem of Gregorian Chant still further.

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If, as the Solesmes musicologists point out, " . . . Plain song [i.e. Gregorian Chant] is vocal Latin music . . . It has been grafted on, and has sprung out of, the natural rhythm[3] and melody of the Latin words, phrases, sections, and periods for which it has been written,"[4] then the proper place to begin our study would be in the Latin prose itself. The "natural rhythm" to which the Solesmes Monks refer actually reduces itself to a free succession of two- and three-syllable groups, which prove themselves an inherent part of any passage of Latin prose because they arise from any one of three possible methods of syllabic group determinations, as follows:

METHOD I - Regarding the first syllable of a word as the beginning of a rhythmic group.[5] Words of more than three syllables ". . . will naturally be divided into the simple elements of two and three. . ."[6]

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[3] "Le rythme est, d'après S. Augustin, 'l'art des mouvements bien ordonnés,' et, d'après Platon, 'l'ordonnance du mouvement.'" Editors, Paroissien Romain, edited by the Benedictines of Solesmes, 1934, p.x. (PR) We shall give a more complete explanation of rhythm in the course of our study. It will be valuable for the reader to keep in mind that "rhythm" to the Solesmes Monks includes both "meter" and "rhythm" as we shall differentiate and explain them later on.

[4] The Liber Usualis, edited by the Benedictines of Solesmes, 1938, p.xxx. (LU)

[5] "Thus there is . . . rhythm of an elementary kind in every word." LU, p.xxx.

[6] LU, p.xxxi.

The determination of the subdivided groups comes largely from the syllable receiving the primary or secondary accent.[7] A monosyllable standing between polysyllabic words will become attached to either, depending upon the context. Two or more successive monosyllables are usually grouped together [Ex.1].

METHOD II - Regarding the accented syllable[8] as the beginning of a group.[9] Certain monosyllables will at times take on the function of a regularly accented syllable. This "acquired" accent is contingent on the position of the word in the passage regarding the thought expressed, or because of various other conditions arising from the context. When more than three syllables occur between primary accents, a subdivision takes place with the secondary accents coming into play as group determinants [Ex.1].

METHOD III - Regarding the final word syllable[10] as the beginning of a group.[11] The groups containing more than three syllables subdivide in a manner similar to that found in Methods I & II. There is a preference for the syllable preceding the accented as a determinant of subdivided groups, but this is not or cannot be adhered to strictly. Monosyllables receive a treatment like that accorded in Methods I & II [Ex.1].

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[7]We shall not discuss rules of Latin accent determination, since that would carry us too far from the real purpose of our study.

[8]The term "arsis", meaning the accented syllable, will be used and explained later on.

[9]"In its elementary form, the rise or arsis i.e. the accented syllable is the beginning of a rhythmic group . . ." LU, p.xxvi.

[10]The term "thesis", meaning the unaccented syllable (and more especially the final syllable of a word), will be explained later on in its relation to "arsis".

[11]Cf. LU, p.xxx.

Notes on Ex. 1:

(1) Here is an excellent example of the acquiring of accent by a monosyllable through the disposition of subdivided groups. Since the syllables "-lem" and "lae-" are both unaccented according to their respective functions within the words "Je-ru-sa-lem" and "lae-ti-ti-a" respectively, the monosyllable "tu" must take on an accent because every syllabic group whether of the main or subdivided varieties must have an accented syllable.

(2) We subdivide Method I into groups of 3-2-3 and Method III into 3-2-3 from an artistic variety standpoint, rather than a possible 2-2-3 in the former and a 2-2-3 in the latter, and

(3) Because the monosyllable "tu" would require an unaccented quality if counted in the group with the following syllable "ho-"(Method I only); in the other grouping it would be accented, since it would become the antithesis of the already determined unaccented syllable "-el" from "Is-ra-el". But since no two accented syllables would follow each other in immediate succession, the subdivision seems to be correct from an internal structure of the Latin accent plan.

(4) This "tu" in Method I would be unaccented in the subdivision. In Method III it could be accented if considered as the last of a subdivided group, the syllable preceding being unexpressed. But this could not be true for the same reason outlined in Note (3) above. Therefore, this "tu" is unaccented and the grouping in Method III actually begins with the monosyllable.

(5) Here it would be "-la o-rì___gi-ná-" instead of "-la o___rì-gi-ná-" for two reasons: (a) Usually only one accented syllable in a group, (in strict linguistic groupings) and (b) In the latter subdivision the first group would be without an accented syllable.

(6) Either "-lis non_____est in___te Fé-" or "-lis non est____in te Fé-" would be correct.

Some observations on the three methods are: (1) The final syllable of the large rhythmic groups in Methods I & II is always unaccented, such as at (a) (b);[13] this is true in Method I because the group always ends with the final word syllable, and in Method II the group always ends on the syllable preceding the main accent (as we have said, two accented syllables never occur in immediate succession in Latin prose); in the case of a group ending with a monosyllable, the unaccented quality is either implied or imposed on that word (c). (2) The first syllable of rhythmic groups outlined by Methods II & III are always regular with respect to being accented or unaccented; in the case of the former, the syllable is accented, while in the latter grouping the syllable is unaccented (d) (e). (3) In its relationship within the word, the accented syllable occupies an unstable position; it may fall on the second (f) or the third (g) syllable from the end, or it may fall on the first (h), second (i), third (j), fourth (k) or more distant syllable (ℓ) from the beginning of a word, depending upon the word's syllabic length. (4) The secondary accent becomes necessary when primary accents fall at so great a syllable distance that a sense of underlying rhythmic groups disappears (m). (5) The static quality of the final word syllable gives it no little prominence in the whole setup of Latin prose. In Method I the inflexible

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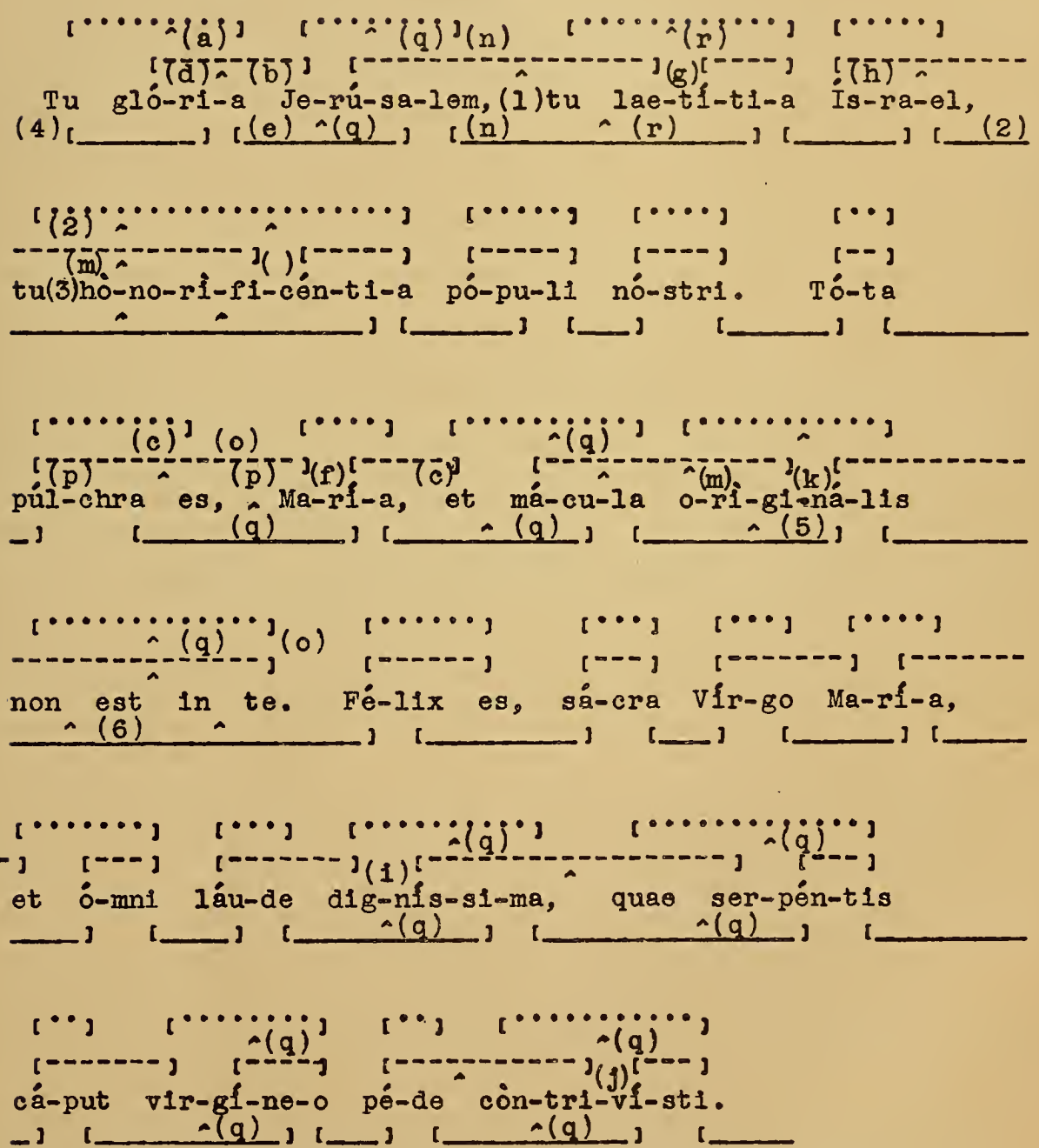
[13]References indicated by letters will be found in Ex. 1.

Ex. 1

Legend: [·····] Method I — ´ Primary accent
[------] Method II — ` Secondary accent
[_____] Method III — ^ Subdivisions

* * *



position of the unaccented syllable always at the end of a group and in Method III the inflexible position of that same syllable as the beginning of a group make of the two methods a kind of alpha-omega affinity, which is born out still further by the flexibility of syllable quality coming at the beginning of a group in Method I and at the end of the group in Method III (n).[14] (6) The most consistent method of rhythmic group determination is Method II, for here the accented syllable is always first and the unaccented syllable is always last (p). The regularity in this method arises from rhythmic determination according to syllabic quality (the only criterion for indicating the first syllable of a group) and from the fact that no two accented syllables may occur in immediate succession (the last syllable of a group). The position which a syllable might occupy within a word has no effect on this method of grouping. (7) In the matter of subdivided groups, the accented syllable always begins a smaller group in Method II because the very nature of this method lies in the accented syllable determining the beginning of a group, whether of the larger or smaller rhythmic variety. In Methods I & III the accented or unaccented quality of syllable that begins subdivided groups comes about in the two-plus-two subdivisions (i.e. the larger rhythmic groups having four syllables divide into two-plus-two syllable sub-groups automatically) by the position of the accented syllable in the word itself (q). Subdivisions occurring in rhythmic groups of five or more syllables are arranged more from the artistic considerations on the part of the analyst--who turns out to be the composer in actual practice--than from some ironclad principle imposed by rules of Latin word structure. The extremely flexible position of the accented syllable in subdivided groups gives them a kinship to Method I of larger group determination. We might mention one "unwritten law" that aids in determining a subdivided group: generally speaking, only one accented syllable will appear in such a group (r). (8) If the first syllable of a main rhythmic group may be of the accented variety, as in Methods I & II and their subdivisions, or of the unaccented variety, as in Methods I & III and their subdivisions, then the first syllable of a rhythmic group of either the larger or smaller varieties would typify two expressive concepts at one and the same time: position and quality. The term introduced by the Solesmes musicologists to designate the syllable regulating a group, either of the main or subdivided species, is ICTUS. This term, perhaps one of the most baffling to those who have had occasion to study the Solesmes Theory, when understood from the very first as representing two distinct syllabic properties, should become clear immediately. The double connotation of ICTUS is, therefore: (1) In time, it will indicate the beginning of a two- or three-syllable group, and (2) In quality, it will represent either the accented or unaccented variety of syllable.

Although we could say justifiably that the term "ictus" is one of the more important rhythmic designating discoveries of our day, and that its importance demands more of a detailed analytical study than we have already given, we feel at this point, however, that attention must be called to the more specific terms used in the Solesmes Theory to characterize the accented and unaccented syllabic qualities so that the explanation of ictus (when it acquires its full significance later on) will be made the easier. The terms "arsis" and "thesis" represent the accented and unaccented qualities of the Latin word syllable, according to the Solesmes Theory. From the Liber Usualis we learn that " . . . the Latin accent is light, lifted up and rounded off like an arch, is not heavy or strongly stressed,[15]

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[14] One possible exception will be noticed in the case of monosyllables, but even here the interpretation of monosyllable placement is so flexible that the exception is more apparent than real (o).

[15] "Heavy or strongly stressed" as used here does not mean that the thesis would be heavy or strongly stressed.

is arsic . . ." [16] and " . . . the final and the weak penultimate syllables are soft, relatively weak, are thetic . . ."[17,18] Since the arsic syllable seems to possess a quality which sets it off from the thetic syllable through its being "lifted up"---a stress which we take to mean as a slight rise in pitch and/or quality of sound, but not that stress arising from intensity when "intensity" means "loud"---, then this syllable inherits a function bound up with its sound in an a priori sense. This is brought out in Method II of rhythmic group analysis, for it was the quality of syllable that distinguished this method of grouping in both its first and final syllables. We learned also from the methods of rhythmic group determination that the accented---now the "arsic"---syllable occupied a flexible position within a word, which would indicate that the arsis has no definite place basically in the expression of time. Thesis, conversely, inherits a function of sterility from the sound standpoint when compared to the arsis, for thesis occupies a static position within a word as is shown in Method I of rhythmic group determination. That is, a word always ends with an unaccented---now the "thetic"---syllable. From the viewpoint of time, the thetic syllable inherits a function of virility, as is exemplified in Method III of rhythmic group analysis. Both arsis and thesis, in that case, might assume a character of weakness or strength depending upon whether they are viewed from the time or sound aspect. [19]

We have already expressed the view of the Solesmes Monks that the melodic line of Gregorian Chant grew out of the natural rhythm of Latin prose. From this we should gather that the three methods of natural rhythmic group determination would find a musical connotation. This is accomplished by applying Method I to the phrase or longer motivic setup: in other words, the length of the musical phrase is determined by the beginnings and endings of words, whether used singly or in groups. Method II brings out the metric scheme: the occurrence of accented syllables---primary accents---from time to time divides the melodic line into measures, not of time, but of sound quality. Both Methods I & II are identified with the larger and more flexible features of the melodic line. Method III, however, serves as the basis of the rhythmic movement in both the pitch and time aspects; it has little or nothing to do with the musical phrase or with the accent plan; it is concerned with the two- and three-beat groups and with the variance in quality of the first note of a group (whether it be arsic or thetic, that is). Method III, therefore, identifies the details of the musical line, details of timing (values of notes or groups of notes in time) and the lightness or gravity of the sound as expressed by the first note of a time group, or by the group as a whole (highness or lowness of pitch).

According to the Solesmes Theory, each note in Gregorian Chant constitutes one beat of time (the length of a beat may be said to conform to our modern conception of "moderato"). All beats are of the same duration. In its simplest transference

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[16] LU, p.xxix,xxx.

[17] LU, p.xxx.

[18] Although "arsis" is fundamentally applied to the primary accented syllable and "thesis" to the very last syllable of a word, these two terms are used in a less restricted sense when applied to secondary accented and unaccented syllables.

[19] The strength of "arsis" in a purely linguistic setting is put into somewhat redundantly poetic language by the Solesmes Monks: "L'accent est l'expression de ce qu'il y a de plus musical dans le language, considéré à ce point de vue, il est une mélodie." Benedictines of Solesmes, Paléographie Musicale, 1892, Vol. 3, p.11 (PM).

to a melodic connotation, a passage of Latin prose would be divided into syllables of equal length, each syllable corresponding to a note (and likewise, a beat) of the music, and every note signifying a definite pitch. In this combination we have Type I of Gregorian Chant, known more commonly as "syllabic chant". In syllabic chant the text is the dominant feature. We can even say that syllabic chant is "musical" to the extent that the nature of the melodic line draws attention away from the words and to its own self. Type I may present a variety of expressions ranging all the way from Psalm intonation to a highly exalted movement in the melodic line (movement by pitch), but in spite of the nature of the pitch line there is a constancy of syllables, following at equal intervals (Ex. 2).

The style of Gregorian Chant we shall designate as Type II will feature the breakdown of continuousness in syllabic time succession. The syllables will in this type follow each other at irregular intervals but they will still be governed by the two- and three-beat groupings. In this type of Gregorian Chant (Ex. 3) a syllable may be sung to a single pitch of one (a),[20] two (c) or three beats (d), to two different pitches (e) or to one pitch of two beats and a second pitch of one beat (f) or to three different pitches (g). This style tends to make the syllable fade into the background while purely musical devices come to the front in order that conditions found in a linguistic connotation may be reproduced in a musical manner.

When four or more beats determine the length of a single syllable, there are two new features which enter into the expressive picture: (1) A note of the melody must assume the function of group determination, and (2) The rhythmic movement of the syllables in time tends to disappear. Thus we have Type III of Gregorian Chant, known as "melismatic", the result when " . . . the verbal rhythm . . . develop(s) into musical rhythm . . . until, in the more ornate pieces, we have musical rhythm only"[21] (Ex. 4).

Since the term "ictus" (which we introduced a few minutes ago and which we have held in abeyance) holds such an important place in the rhythmic structure of Gregorian Chant, and since the term has been misunderstood (or not understood at all)[22] by musicians ever since the word came to be associated with the Solesmes Theory, we shall now attempt an explanation that has resulted from the various comments given by the Solesmes Monks themselves, as well as from an analysis of its use in music according to our own findings. As a background, we shall quote the instances in the Liber Usualis where attempts to elucidate the problem of ictus are made by the Solesmes musicians: ". . . intensity is not inherent in any rhythmic sign."[23] ". . . the dynamic value or strength of the ictus or rhythmic step varies considerably. Sometimes it is strong; sometimes weak; everything depends on the syllable to which it corresponds and the position it occupies in the

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[20] The difference between a syllable appearing on a single note in Type I and Type II is that in the latter instance the syllables do not follow each other on successive one-beat notes. (Ex. 3, (b)).

[21] LU, p.xxxii.

[22] The vagueness which exists in regard to the ictus springs largely from the Solesmes explanations themselves, and the attempt to untangle them has often led to a statement similar to the one we quote from Gustave Reese in his Music in the Middle Ages, 1940, p.142: "The idea of grouping rhythmic units without a stress . . . is likely to be puzzling . . . it is perhaps up to the physio-psychologist to settle the problem of determining what communicable form it takes." We might add that the exact meaning of "rhythmic unit" has much to do with the understanding of the ictus.

[23] LU, p.xx.

melody.[24] "The fact therefore that this intensity varies is a proof that the ictus belongs not to the dynamic but to the rhythmic order; its being and influence are contributed and felt by elements from the melody and text."[25] ". . . it [the ictus] is felt and intimated by tone of voice rather than expressed by any material emphasis."[26] ". . . we shall . . . meet in Plain song accented syllables outside and independent of the ictus . . ."[27] "The light and arsic character so essential to the Latin accent must always be brought out even when it coincides with the rhythmic ictus . . ."[28] ". . . the notes from one ictus to the next . . . are treated like slurred notes in modern music."[29] "These [the rhythmic groupings] . . . must be felt by the singer and intimated in the voice . . . they are an extension of the principle at work in the introduction of bar lines."[30] "The composer's artistic genius . . . has often stressed certain notes, and in this way suggested such and such a rhythmic grouping. Because of its connection with the melodic element, the verbal rhythm has . . . developed into the musical rhythm only."[31]

We have pointed out already that the ictus should be thought of in a double functioning capacity: (1) The point in time at which a group of two or three beats begins, and (2) The features of the text (and now melody) that cause such groups of two or three beats to exist and thus to make of that first beat an individually functioning entity. The meaning of ictus as it functions as the first of a group will become clearer when it is realized that its "intensity varies", varies all the way from no appreciable difference through the pitch, quality or quantity faculties to that of pitch, quality and quantity combined. The beat carrying the ictus may function in its already defined regulatory capacity not because of itself, but because of surrounding notes. It may even function in a pure time connotation: the element of length in relation to surrounding notes would in this case make of the note a regulatory factor. It is possible also that the position of the ictus be inferred; this comes about usually through sequential devices, but in some instances the time element is the determinant (such as the larger groups of four or five beats subdividing into two-plus-two, and two-plus-three or three-plus-two respectively). A further observation is that an arsic or thetic syllable occurring with the note functioning as an ictus may have little or no effect on it on the grounds of the arsic or thetic quality of the syllable, because more often than not musical facts themselves prove that the ictus functions in a truly relative capacity to its immediate surroundings in regard to the quality it takes on, thus bearing out the contention that in itself it is neither arsic nor thetic.

All these details of the meaning of ictus point out that it functions in a two-fold capacity: (1) Marking off time divisions of compound beats[32] consisting of two or three units each, and (2) Presenting a subjective quality of sound which

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[24]-LU, p.xxix. [25]- LU, p.xxix. [26]- LU, p.xxix. [27]- LU, p.xxx. [28]- LU, p.xxx(a). [29]- LU, p.xxxi. [30]- LU, p.xxxii.

[31] LU, p.xxxii. A further explanation of the ictus is given in PR, p.xi: "L'ictus est essentiellement, dans la succession du temps, le moment ou le mouvement après s'être élancé, retombe et touche terre, soit pour s'arrêter, soit au contraire pour continuer."

[32] ". . . we have two or three single notes forming a compound beat or rhythmic group." LU, p.xx. Also: ". . . the group of notes thus created forms a compound beat . . . Just as in 6-8 time e.g. three quavers form a beat, so in Plainsong the individual notes . . . from one ictus to the next group themselves two by two or three by three . . ." LU, p.xxxi.

varies from one ictus to the next at the discretion not of the performer but of the composer. The quality of sound interrelations which the note receiving the ictus may possess at any given moment, as well as the time groups, are as numerous as they are varied. This is the aesthetic result of the expression of movement in time and sound; it is the true rhythm of Gregorian Chant. The ictus is merely the regulatory factor in the smaller rhythmic setup. It has no connection whatsoever with meter, which we have defined already as the occurrence of specific accents,[33] because the ictus has no regular appearance connection with the arsic syllable; the irregularity with which the arsic syllable and the note carrying the ictus coincide would in itself prove this point. Also, the thetic syllable and the ictus are not too regular in simultaneous occurrence, although the Solesmes Theory implies this.[34] The ictus and thesis do coincide on the first of a large rhythmic group in Method III, but in the case of subdivided groups the irregularity becomes more evident.

We cannot proceed into a more detailed discussion of the ictus without the use of examples, for these will show the many instances of artistry in Gregorian Chant much more clearly than we could hope to accomplish otherwise. Our method of procedure in this respect will be to give a condensed set of five rules for finding the melodic ictus[35] from a notational standpoint, and from the groupings as shown in the notation we shall be able to determine the inherent or the imposed ictus placement by comparison with the groupings which would arise without the aid of such signs. The more or less mechanical rules for finding the melodic ictus, to be applied in the order given as an order of precedence, are:

I. Where indicated by the vertical episema (').[36] "When, however, we have no indication of time, no timebars as in Plainsong, and no groups or long notes, we shall be obliged to mark the beginning of the beat, ictus, rhythmic step, or alighting point, each time the notation does not mark it for us. This is the role of the vertical episema."[37] "The acceptance of these principles governing the ictus does not necessarily imply agreement with their application in every instance."[38] The vertical episema is a sign added by the Solesmes Monks as editors, indicating their judgment as to the rhythmic group when such group may not be clear upon reading the music for practical singing purposes. The Solesmes musicians quickly point out that their suggestions must not be construed as the only possible grouping under the circumstances, but to them it is the most artistic and practical (Ex. 5).

II. Notes of length. (a) Dotted notes (a dotted note in Gregorian Chant indicates a doubling of the value: that is, two beats instead of one); (b) The Pressus (two notes appearing on the same degree, the second note beginning a neum, the first being a punctum or the last note of another neum); (c) The Oriscus (a single note coming after a neum, on the same degree or the degree above, with the last note of

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[33]Cf. p. 11. [34]Cf. LU, p.xxxi.

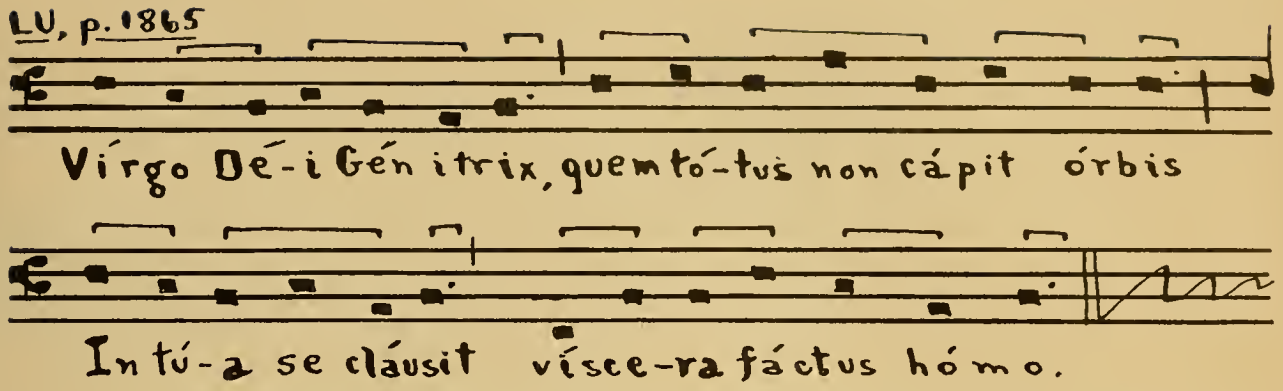
[35]The term "melodic ictus" means the position of the ictus---the beginning of a rhythmic group of two or three notes---as found through the particular way in which the pitches of the melody are notated.

[36]There are two kinds of episemas: the vertical episema is exclusively a Solesmes device as explained above; the horizontal episema (-) ". . . indicates a slight lengthening of the note", and usually indicates the placement of the ictus. LU, p.xx.

[37]LU, p.xxvii. [38]LU, p.xxix.

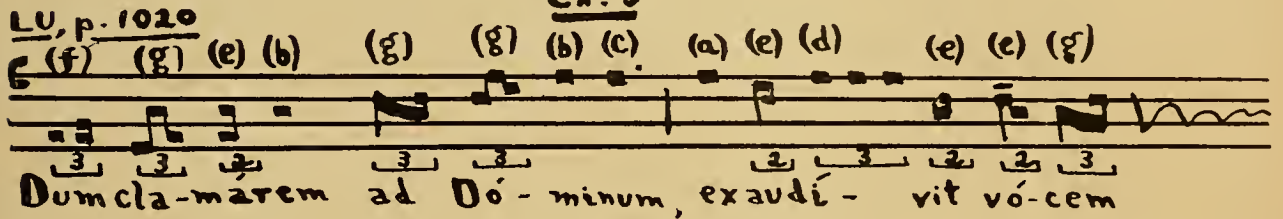
Ex. 1

LU, p. 1865



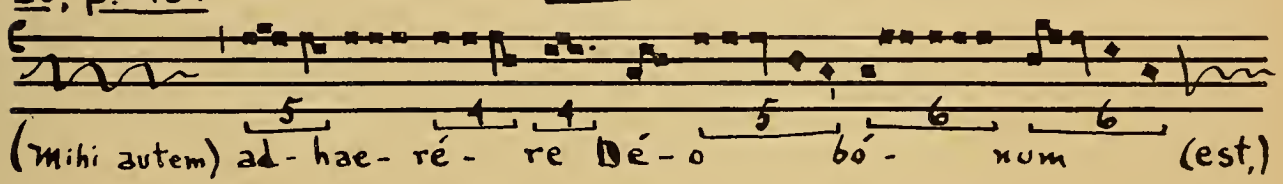
Ex. 3

LU, p. 1020



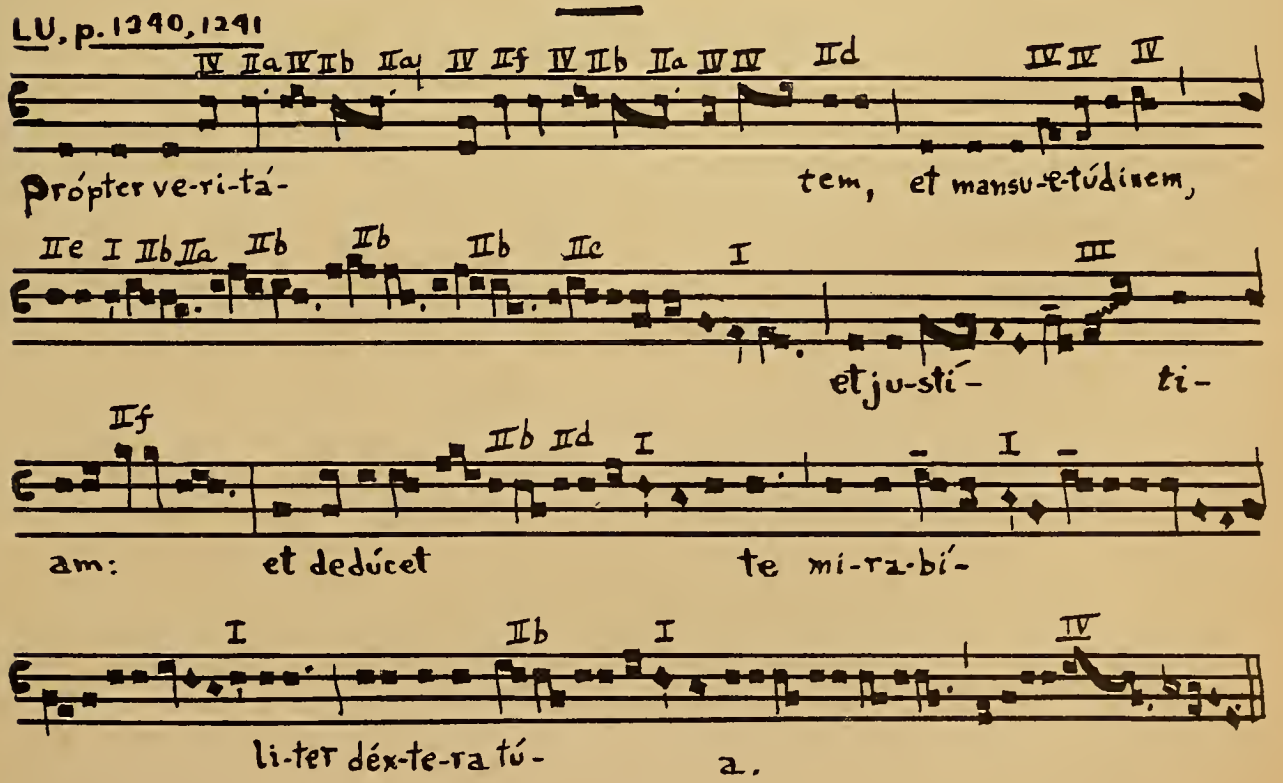
Ex. 4

LU, p. 1967



Ex. 5

LU, p. 1240, 1241



the neum receiving the ictus); (d) Distropha; (e) Tristropha; (f) Bivirga. (Ex. 5)[39]

III. Note preceding a quilisma. "The note immediately before the quilisma should be notably lengthened, and be the most emphasized of the whole group even when preceded by a double note"[40] (Ex. 5).

These first three rules seldom require exception; they are never contradictory within themselves. They should be employed in preference to the fourth rule which, in turn, takes care of the ictus placement after the possibilities have been exhausted with the first three.

IV. First note of a neum (Ex. 5).

V. By purely linguistic considerations, regarding the word syllables in their relative importance as they arise from determining rhythmic groups outside the melodic line, preferring first of all the last syllable---the thesis; secondly, the accented syllable---the arsis; and thirdly, avoiding as far as possible the weak penultimate syllable---and most of all, taking into account the variety and unity of the phrase as it results from the potential groupings. This rule becomes valid when there are no vertical episemas, and because of that, it has no interference with Rule I. It obviously has no interference with the other rules, because here the problem is one relating to syllabic chant only (Ex. 2).[41,42]

From these mechanical rules of ictus position we shall proceed to the musical placement of the ictus. We see that Type I of Gregorian Chant (i.e. syllabic chant) is almost entirely regulated by the groupings of word syllables as they would come outside the melodic line; Rule V of melodic ictus determination is to be applied to this type of Chant, according to the Solesmes teachings. In Type II of Gregorian Chant the groups of notes are regulated in effect almost entirely by the entrance of syllables, but in this type we discover musical features beginning to take on an importance that in some instances outweighs the linguistic elements.[43] The most important details of syllabic treatment in Type II arise from the contrast between the arsic and thetic syllables through the devices of time and pitch; often the rhythmic groupings of the melody are made evident by the mere percussive entry of a syllable (Ex. 6), while in other cases it is the construction of the melody that justifies the existence of rhythmic groups, in spite of the syllable entrance (Ex. 7), indicated in the music by notational signs such as neums and episemas. Type III, melismatic chant, shows the complete emergence of the melodic line as an expressive factor; the details of the line itself will have to account for the rhythmic groups, for no percussive entry of the syllable

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[39] See footnote 36, page 12, in regard to the horizontal episema indicating a note of length.

[40] LU, p.xxv. The quilisma is a jagged note having a special quality added by the performer.

[41] Cf. LU, p.xxix.

[42] Note that the rules for ictus placement begin with the musical and end with the syllabic, whereas the types of Gregorian Chant reverse this process.

[43] The same criteria for determining the existence of rhythmic groups from the purely musical standpoint that will be outlined in Type III may just as well be applied here.

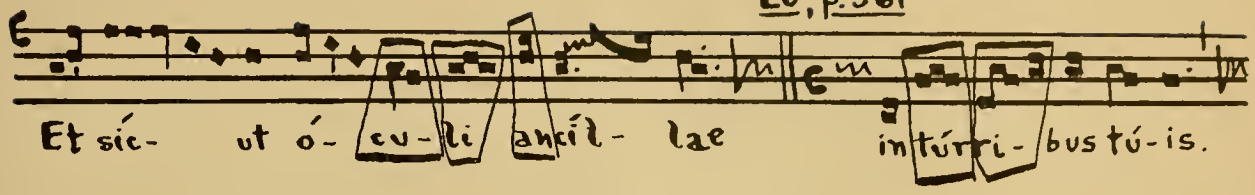
is present to mark off the groups. It is this latter type which should give us the answer to the purely musical rhythmic structure by showing what melodic devices determine groups naturally when compared with the groupings indicated by the composer, as well as how an artificial grouping may be achieved.

Before we take up the study of the pure melodic chant exemplified in Type III, we must observe the treatment of arsic and thetic syllables in Type II as they are woven into the framework of the melodic line when it emerges as an independent expressive agent. We notice in Type II that the arsic syllable begins to receive a special kind of treatment, although the treatment consists mainly of an expression in relation to the treatment of the thetic syllables. It may be regarded as a general precept that the arsic elements in a melodic line are often associated with a sudden expressive use of pitch and time movement (Ex.8), upward skips (Ex. 8), high pitch level (Ex. 8), short notes (Ex. 9), short melismas (as against longer ones for the thetic syllable) (Ex. 10) and the like. The appearance of thetic elements in relation to the characteristics of arsis just given is mainly that of no movement or sudden slowing of movement in time, falling movement (pitch), long melismas and low pitch level (Ex. 11). We would like to point out that in places where the arsis and thesis seem to be expressed by opposite characteristics to those just given, the melody itself has risen to prominence as an expressive force in its own right, and that the quality of the syllable no longer regulates the reproduction of linguistic features in the melody. It will be observed that the thetic characteristics are more regularly found in the restricted sense we have pointed out than are the arsic characteristics. It seems that the concept of staticity is more of a necessity in order that a rhythmic foundation be achieved than is that of movement; this is but a natural condition, since the arsic syllable in itself---whenever and however it may enter---will always be the arsic syllable, while it would not be so easy to bring out the thetic syllable into its opposite expression, into that of the arsic concept, by anything less than an extreme exertion in pitch and time movement.

The expression of arsic and thetic contrasts in Type II of Gregorian Chant is fully realized in a pure melodic connotation in Type III. Although melismatic chant of more than three notes to a syllable characterizes this type, we must point out again that melismas of four notes would subdivide automatically into two-plus-two groupings, and that melismas of five notes would be two-plus-three or three-plus-two. As the melismas become longer the possibilities for non-inferred predetermined groups becomes greater, and in these instances the two- or three-beat groupings are not always accounted for by such a time process alone. The expression of arsis and thesis in musical terms follows the general line of reasoning given in Type II; but since the first note of a group may be of either an arsic or thetic nature, we shall have to find more tangible means for determining the rules of ictus occurrence. As in Type II, the thetic concept of no movement, long notes, falling movement and the like plays an important and governing part in the melodic line. Generally speaking, we can say that the points in the melody brought out by long notes make the other groups seem more obvious. Besides this over-all observation, the devices which seem to justify the notational signs in the formation of rhythmic groups are: (Ex. 12) (a) Beginning of a phrase, if the following notes are of regular length and move conjunctly; (b) Turn of the melodic line; (c) Skip to a note (upwards, generally); (d) Pattern repetition; and (e) Long notes. Of course, the context of any passage may nullify one or all of the foregoing devices (with the exception of (e) which remains a constant

Ex. 6

LU, p. 554

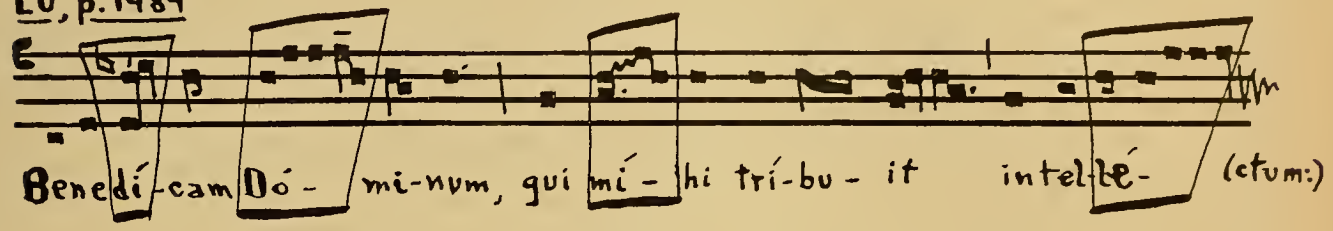


Ex. 7

LU, p. 561

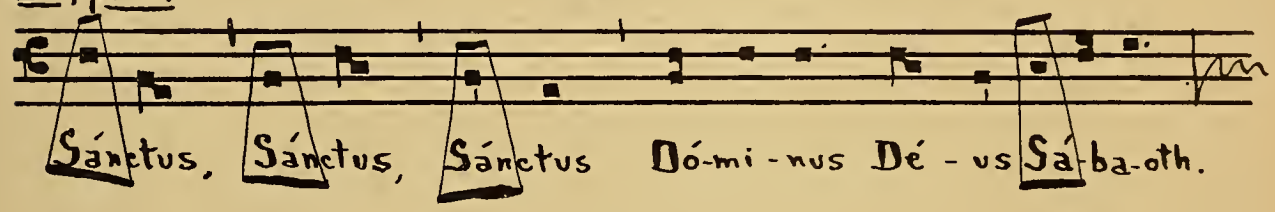
Ex. 8

LU, p. 1989



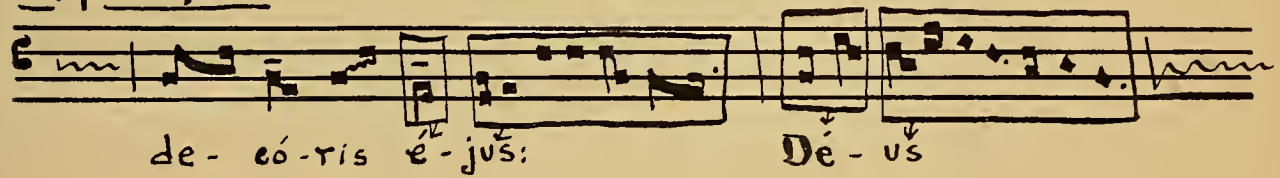
Ex. 9

LU, p. 59



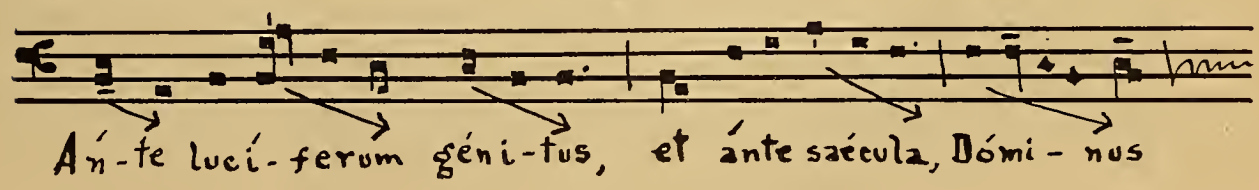
Ex. 10

LU, p. 328, 329



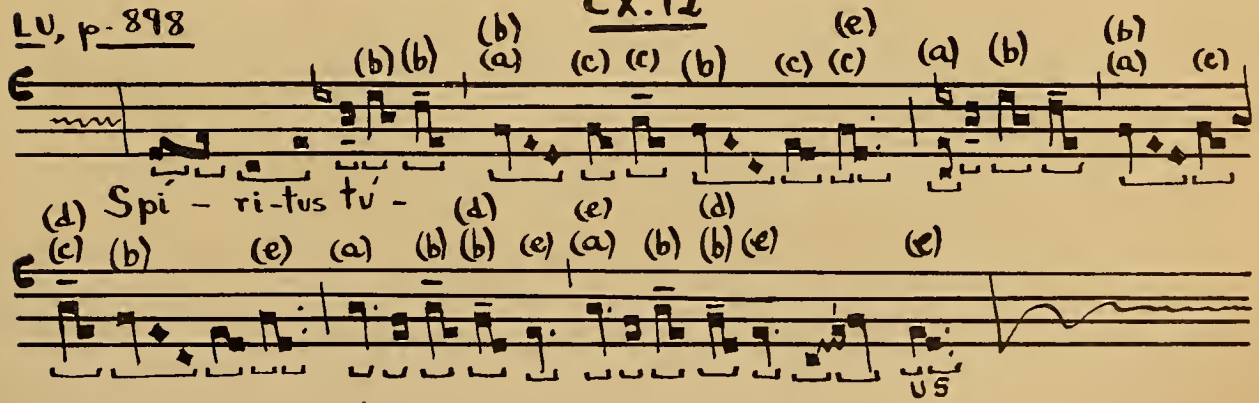
Ex. 11

LU, p. 463



Ex. 12

LU, p. 898



quality for group beginnings). Instances where the composer introduces an artificial group may be seen in Ex. 13.[44]

By way of review, we can see first of all that the Gregorian Chant composer has created a most unique style of linguistic and melodic unity and contrast. All the facts we have presented in connection with the various procedures of word-syllable and melody-note combinations have been merely a detailed statement of that which the Solesmes Monks have expressed in a general way: ". . . The melodic order has often suggested or imposed a rhythmic grouping independent of the words taken by themselves. The composer's artistic genius, as we see in the manuscripts, has often stressed certain notes, and in this way suggested such and such a rhythmic grouping. Because of its connection with the melodic element, the verbal rhythm has, at the same time, developed into musical rhythm with its own laws of tonality, modality and beauty, until, in the more ornate pieces, we have musical rhythm only. But this rhythm always keeps its freedom, a freedom determined on each occasion by the natural rhythm of the words, the actual elements of the melody or the indications of the manuscripts."[45] And secondly, we find that in spite of the extent to which the composer's imagination may lead him, there are two basic principles underlining the contrasts of this imagination: they are the concepts of arsis and thesis.

The composer exploits arsis and thesis in various ways; at one moment they appear in their true characters, at the next they fall back all the way to a sterile oneness of function, or through the advantages of melodic devices they may have their opposite characteristics expressed at one and the same time. By and large, we believe that the concept of arsis, whether it be expressed through the syllable alone, by its integrating with a note of the melody, or by the melody note itself, is truly that of being light, flexible, lifted, unstable, and always highly personalized. The composer of Gregorian Chant depicted this concept by setting off that syllable in a special way through the advantages of pitch and time relationships found only in the characteristics arising from melodic devices. When the arsic syllable was not present, the note in the melody was able to take over the function entirely. In a corresponding manner, the concept of thesis, that of settling, stability, of impersonality, was accomplished by certain melodic devices which could best express those qualities: length, dropping of the phrase, smoothing out.

And now it is possible to clarify the problem of meter and rhythm as it arises in Gregorian Chant, and to show the relations which meter and rhythm have with the ictus. We believe that when the Solesmes Monks define rhythm as ". . .a movement . . . wherein it successively rises and falls. It is in the well-ordered succession of such movements that rhythm essentially consists",[46] the meaning is

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[44] There is remaining one possibility of relationship between the melodic ictus and the word syllable. It may be argued---and with no small amount of evidence---that the meanings of separate words or word groups might influence the groupings of notes. This would come under the caption of "word-tone painting", a subject that has been treated most interestingly through its use in another and later idiom, that of the 16th century, by Knud Jeppesen in his Der Palestrinastil und die Dissonanz, 1925. We believe that the scope of our present study does not lend itself to a detailed perusal of this fascinating problem, for the conclusions reached here could be little more than interesting special cases, and their occurrences would be so far apart that their value would be lost in our attempts to present the more prevalent determinants of rhythmic groups.

[45] LU, p.xxxii. [46] LU, p.xxvi.

restricted to what we call pure rhythm---movement in time and pitch---and not to meter, which to us means a succession of accents. Rhythm is the detailed regulatory element in music; in Gregorian Chant it is the compound beat of two or three units giving a basic concept of regulation in time, and the compound beat of two or three units giving a basic concept of pitch movement.[47] In its simplest form, the regulation concepts in time and pitch arise from Method III of word-group determination. The smaller rhythmic groups (i.e. the groups of two and three units) combine to form larger units of rhythm which become larger concepts of movement in pitch (known as the "contour of the melodic line") and time-movement (known more commonly as the "phrase"). The determination of rhythmic groups by Method I comes into importance in this connection. The phrases group themselves into sections, the sections into the complete composition, and thus we have the complete rhythmic structure.[48]

Meter, however, is not connected with the rhythmic process in any regular way. Again we say that when we speak of "meter", we mean "accent"---accent of a specific nature, such as is exemplified in the arsic syllable or by the melodic devices we have pointed out. We mean, when we speak of accent, that certain notes or syllables are set off from the others by a stress inherent in the syllable (the arsis) or inherent in the note by means of its entrance or its place in the line, and not necessarily an applied and artificial stress. Whereas the rhythmic scheme of Gregorian Chant is regular (i.e. the timings of rise and fall of pitch and the time occurrence of the beats follow basic patterns easily caught up and remembered as compound beats of unity, although they may alternate in all kinds of fanciful ways according to the wishes of the composer), the timing of accents is nothing like regular: they may occur at any place in the line, with or outside the ictus. This differentiation between meter and rhythm is an absolute necessity if we desire to understand the true meaning and nature of Gregorian Chant. It is this differentiation which 19th century musicologists failed to make, and consequently they missed the point of the music when they attempted to subject the aesthetic and theoretic principles of Gregorian Chant to an analysis other than the one belonging to it by right. Even the Solesmes musicologists did not clearly distinguish between meter and rhythm, for they labored under the delusion of their being no difference, along with the other musicians of their day. The Solesmes musicologists did discover that the music of their own time was far different from Gregorian Chant; in this way they broke the barriers of judging music written in a past age according to idiosyncrasies of the harmonic idiom. They recognized the existence of a two-fold metric-rhythmic plan, but they were not interested in, nor were they desirous of parting company with terms so loosely treated by their musical colleagues. We must not be too harsh in our judgment of 19th century investigators when the subject of meter and rhythm is brought up, for in a sense their views were not entirely without justification, since the music of the 19th century contained rhythmic groups which coincided in many instances with the metric scheme, or vice versa. It was difficult to distinguish between meter and rhythm, or even to realize there were in existence two separate and distinct elements of music when the two would more often than not appear simultaneously. But this coincidence still does not mean that meter and rhythm were completely synonomous even in 19th century music, much less in the music of other periods.[49]

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[47] For references to the Liber Usualis on "compound beat" see footnote 32.

[48] Cf. LU, p.xxvii.

[49] Ex. 13 gives a detailed musical account of the separateness enjoyed by meter and rhythm in Gregorian Chant. We have selected as the example the music that was composed to the text we employed in the beginning of our study to show the three methods of word syllable groups.

Notes on Ex. 13:

(a) The monosyllable "tu" is thetic here, because of context.

(b) The long melisma on the final word syllable (thetic) as it ends the musical phrase makes an interesting comparison in function with the long melismas on arsic syllables, as at (c).

(c) The long melismas on the arsic syllables and the short thetic syllables help to give continuity to the larger rhythm.

(d) The large rhythmic groups have little significance even in the word thought meaning when connected with highly melismatic Gregorian Chant.

(e) The group is determined here by a skip as well as length.

(f) An "artificial" group, the first note of which is brought out by a " . . . gentle and delicate repercussion . . ." LU, p.xxiii.

(g) The monosyllable "tu" undoubtedly is intended as joined to "laeti-ti-a", in the manner of grouping according to Method I, because of the musical phrasing.

(h) A typical use of the skip accounting for the first of a rhythmic group, preceded by an arsic syllable on one note.

(i) Here the group is begun clearly with a note of two beats followed by a drop in pitch on the third beat, while at

(j) The group begins on the "g" because of length. This leaves the group starting at (i) with four beats, i.e. from the held note to the following held note, which is a rare instance of subtlety in group determination. The "c" preceding the "g" is an excellent example of the musical arsis.

(k) Whether the sign of the ictus is correctly placed is open to question. By the musical analysis, the preceding note would seem more logical.

(l) Sequential figure would determine these groupings.

(m) The small note is called "liquescent". Cf. LU, p.xxiv.

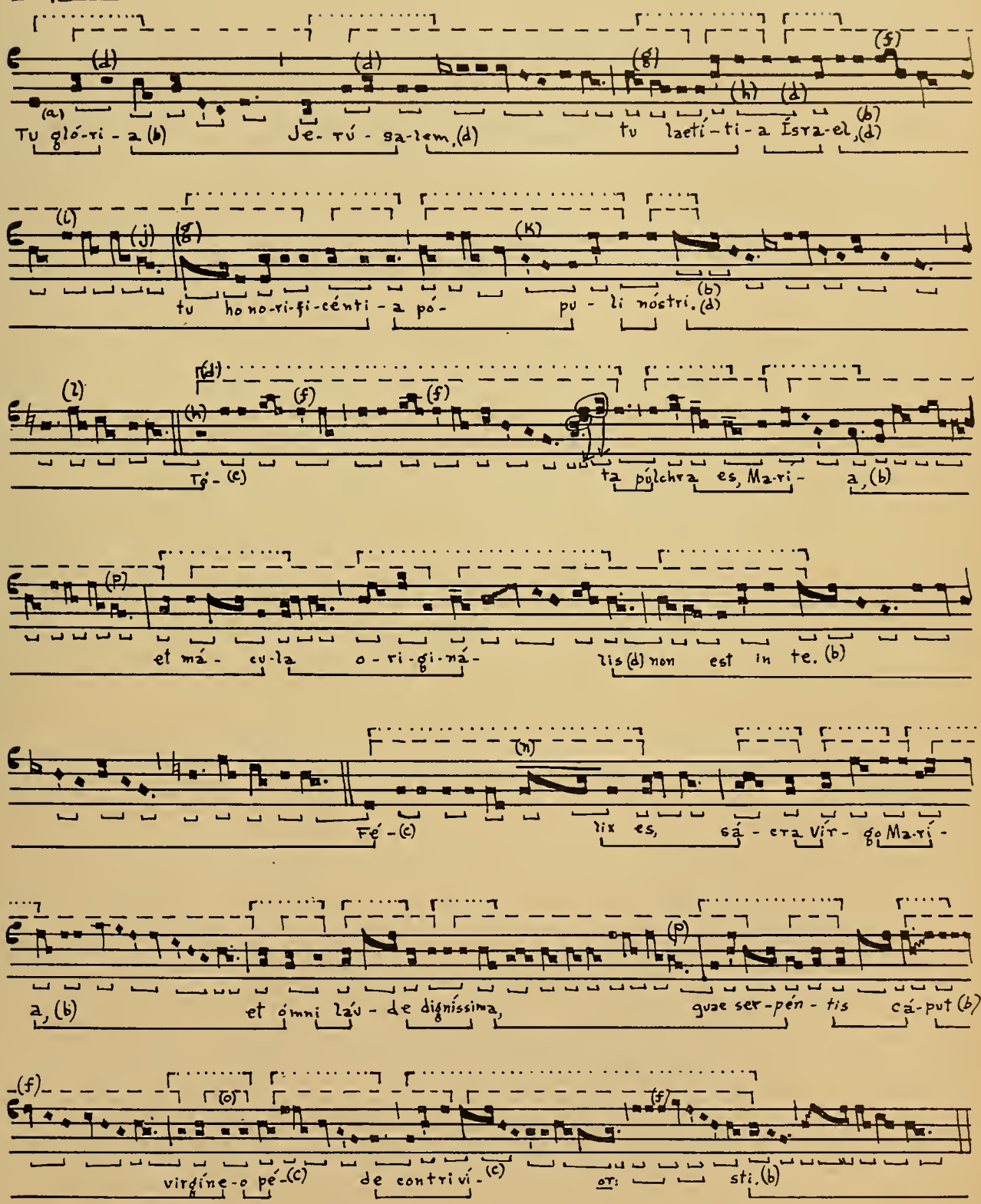
(n) The long horizontal episema indicates a slight lengthening of all notes of this neum.

(o) Within a melodic line of Gregorian Chant, a melodic rhythmic group may exist in connection with a group of syllables without a linguistic accent, in a manner similar to a single unaccented syllable being sung to a group of two or three notes.

(p) We call attention again to the use of this idiomatic group which was introduced at (j).

Ex. 13

LU, p. 1378



Before we transfer the Solesmes Theory of rhythmic groups to the Dufay and Okeghem Masses, there are several correspondences between the styles of Gregorian Chant and the Masses which point to a closeness in construction and which we would like to bring out at this point. The most evident of these correspondences arises from an observation of the melodic lines deprived of their obvious dissimilarities in time values (Ex. 14). The melodic lines have very similar contours, ranges and inflexions. Repetition of tones occurs in both styles approximately with the same frequency. If the characteristics of time patterns were changed from one to the other, the resulting melody would instantly take on the characteristics so closely identified with the opposite music style. A second similarity is that of the easily identified two- and three-beat rhythmic patterns in the Masses, corresponding in an astonishing way to the two- and three-beat groups in Gregorian Chant (Ex. 15)[50]. There is a third likeness to be found in the recurring note patterns of the Masses, which doubtless could trace their evolutionary existence to certain neumatic groups so much a part of Gregorian Chant (Ex. 16.). The co-uniformity of these three correspondences seem to us to be more than items of mere passing interest.

Running parallel with the similarities noted above are the many points of variance, although the variances do not seem to exert any appreciable degree of influence on the correspondences. The most noticeable of the differences is the incredible variety of note values. In Gregorian Chant the single note represented only one value in time (the dotted note was considered a "double" note). With a vocabulary of note values ranging all the way from the maxima to the fusa (Ex. 17), an unbelievable quantity of note time-patterns could be devised---and the 15th century composers were not at all reticent in making full use of these possibilities. Another difference is the change of fundamental beat within a phrase in the "Caput" music, while the fundamental beat in Gregorian Chant remains constant. This is usually accomplished in a subtle and almost undetected manner; sometimes one is not aware that the change has taken place until the transition back to the original beat-unit transpires, or the new beat becomes fairly well established (Ex. 18). The really significant difference between the two styles, however, is that words play such an important role in Gregorian Chant while they are either widely scattered or seemingly unmethodical in their points of contact with the music of the 15th century. The latter point of difference makes it imperative that in the transference of the Solesmes Theory to the Dufay and Okeghem Masses we look to the characteristics found in Type III of Gregorian Chant as a means of effecting the transition.

In reality, the differences reduce themselves to two: (1) The variety of note values which form a wealth of note patterns---and in this may be included the change of fundamental beat, which is actually a result of the extremely flexible note values---as found in the Masses, while the note patterns in Gregorian Chant are limited to a simple set of five (Ex. 19); (2) The variety of rhythm patterns produced by the linguistic groups, held together by an unchanging fundamental beat---the main feature of Gregorian Chant and its absence from the Masses. By reconciling these two differences (we can easily do this because it is fairly obvious that the lack of words in the Masses is overcome by the addition of time-value patterns which in their turn are insignificant in the Plainsong setup) we will have solved the metric and rhythmic setup of the "Caput" Masses by admitting the possibility of a purely musical expression of the features of Gregorian Chant which combined linguistic and melodic elements.

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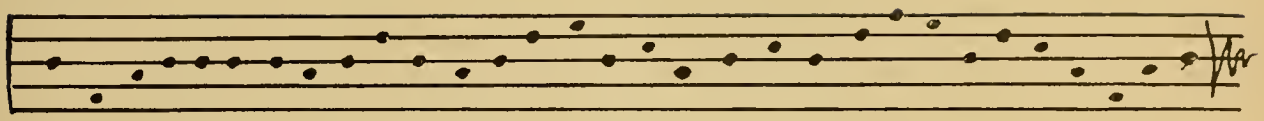
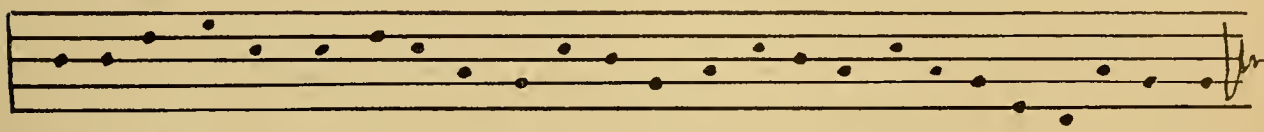
[50]Even the existence of four-beat and five-beat patterns closely follows the plan of Gregorian Chant, these subdividing into two- and three-beat groups according to the circumstances.

Ex. 14

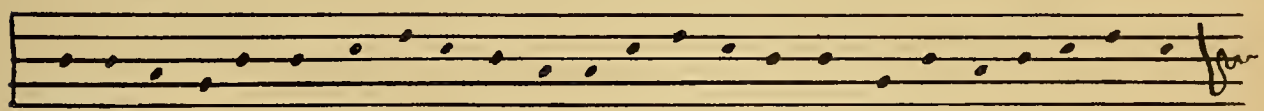
LU, p. 124



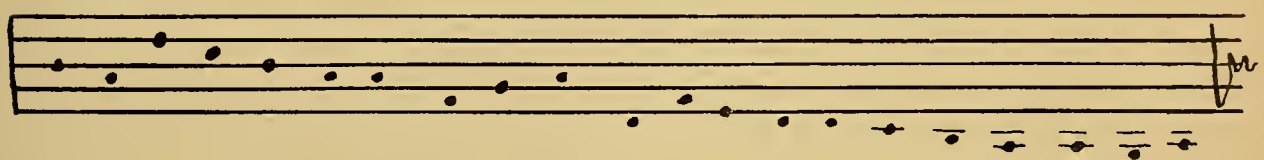
DF, credo



LU, p. 918

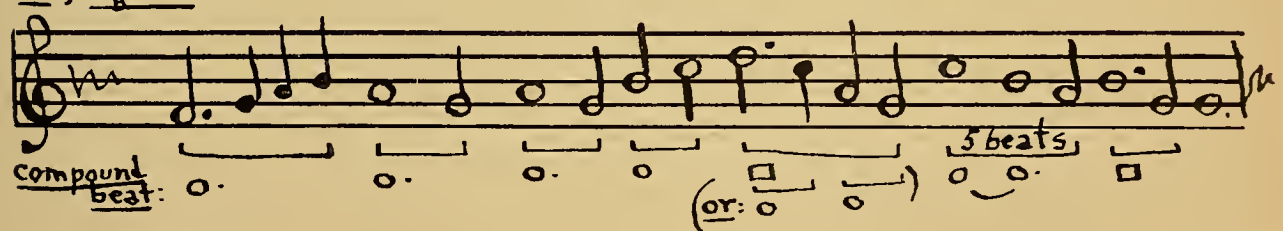


OK, Sanctus

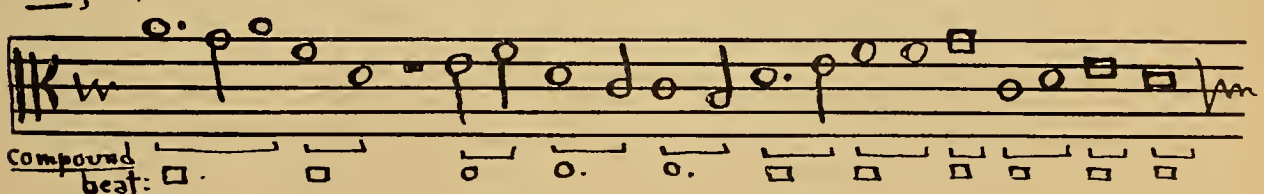


Ex. 15

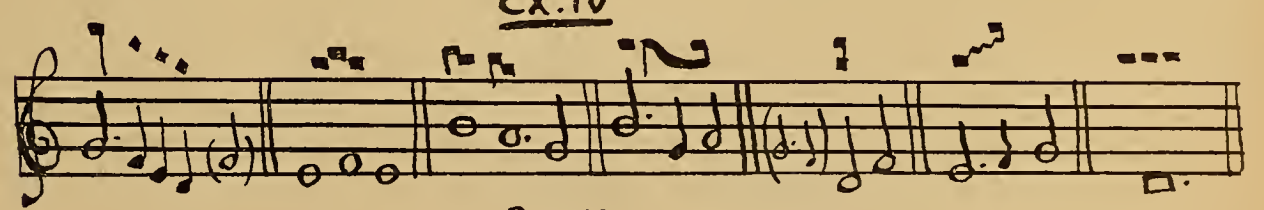
OK, Agnus



DF, KYRIE



Ex. 16



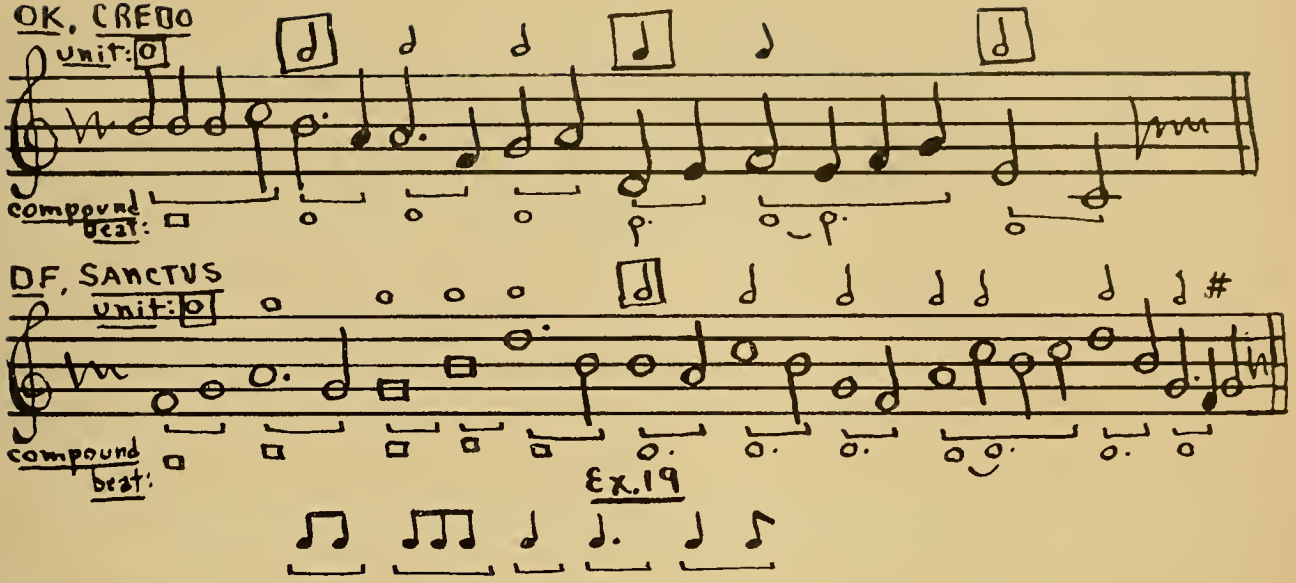
Ex. 17

In other words, the concepts of arsis and thesis as we once knew them in a combined linguistic and melodic significance will now assume a purely melodic connotation, similar to that found in the highly melismatic passages of Gregorian Chant. The concept of arsis, in this transformation, is taken over into the latter style almost without change; that is, the distinguishing of notes in Gregorian Chant melismatic passages will remain stable in the change, for there is no element characteristic of the new style which affects the metric determination and which was not present in the expressive devices of Gregorian Chant from the purely linear aspect. Points reached in the melodic line because of special ways of treatment will make up the metric plan in the Masses, as did this device in the melismatic type of Gregorian Chant. The concept of thesis will be taken over by groups of two- and three-beat note patterns much the same as they were found in Gregorian Chant; the expression of distance reached by means of both time and pitch will be noticeably enlarged because of the greater variety of note values. The variety in note values will serve a double purpose: they will admit much more subtlety between points reached in time and pitch, and they will make possible a more definite means of clarifying the thetic concept expecially in its length aspect.

Rhythmic groups of two and three beats arise in the "Caput" Masses by means of the thetic concept mainly, and this harmonizes exactly with the corresponding results in Gregorian Chant. In fact, the beginning of a rhythmic group in the Masses is much more regular in this respect, and this is necessary because the absence of words makes it mandatory that some one musical factor take over the function carried out by two devices previously. The note which, by analogy with its connotation in Gregorian Chant, receives the ictus, and the notes making up the remainder of the two- and three-beat groups, fall into standardized and easily recognized proportional patterns (Ex. 20). More often than not it is the note of length, when compared with surrounding notes, that causes the rhythmic group to come into existence (as we have pointed out before). But there are instances when the two or three notes making up the group may be even in time value, yet they form a rhythmic group; such a situation usually occurs when certain elements of the context are active. Occasionally in notes of equal values the rhythmic grouping is achieved by the arsic concept of accent; this, too, is wholly consistent with similar instances in Gregorian Chant. These and the many additional means of determination that arise as the occasion of the music demands give a picture of the detailed rhythmic setup of the "Caput" Masses (See Ex. 21).

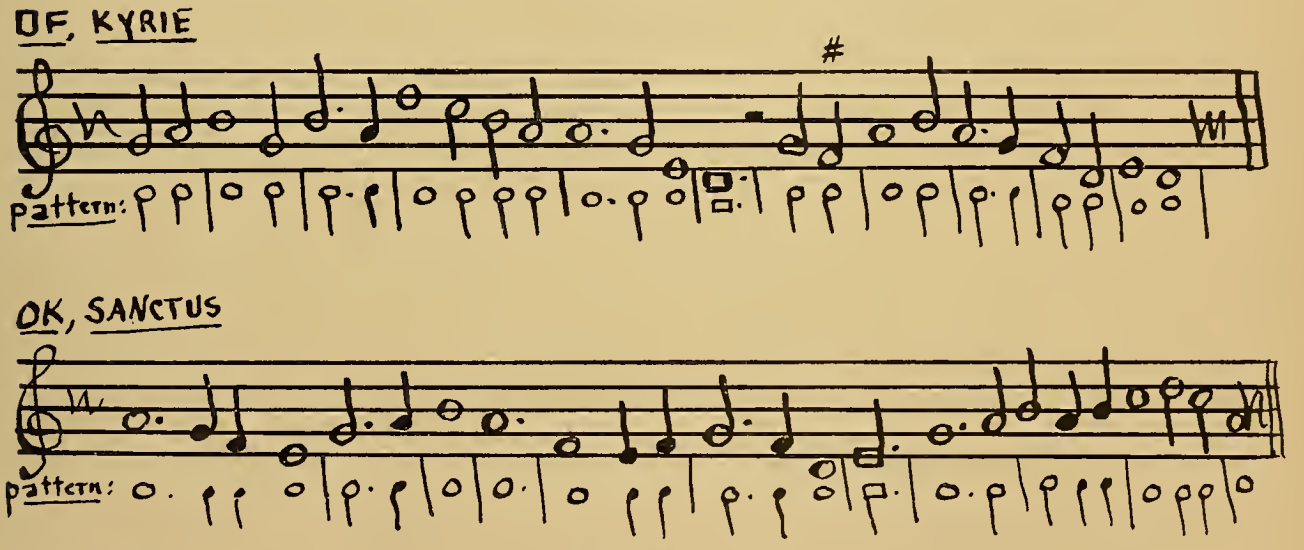
From time to time the notes are set off by means of their melodic position, their being skipped to, their being the highest note of the phrase, or their anticipating a note of the pure thetic concept. By the skillful placing of special notes we can say that the arsic concept is realized. The expression of the arsic concept is not always entirely divorced from the thetic concept in the matter of its simultaneous occurrence, for there are numerous instances where the note receiving the ictus will be individualized according to both arsic and thetic principles. Here, as in Gregorian Chant, it must be remembered that the concept of arsis is not necessarily or <u>per se</u> associated with the first note of a rhythmic group, for arsis is first of all metric by nature. The arsis may affect and even bring into being a rhythmic group (as we have suggested in the preceding paragraph), but the note when it expresses a special effect and thus fulfills its arsic function should not be confused with that same note when it regulates the time significance of a group of notes and thus realizes a rhythmic function.

Ex. 18

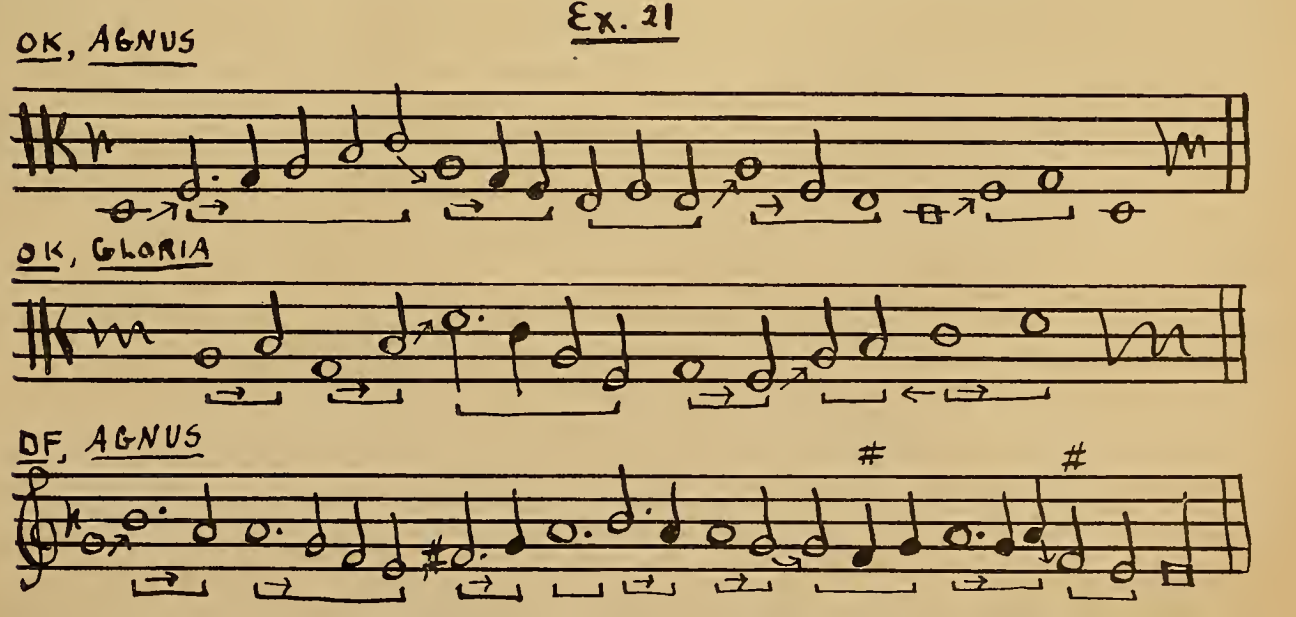


Ex. 19

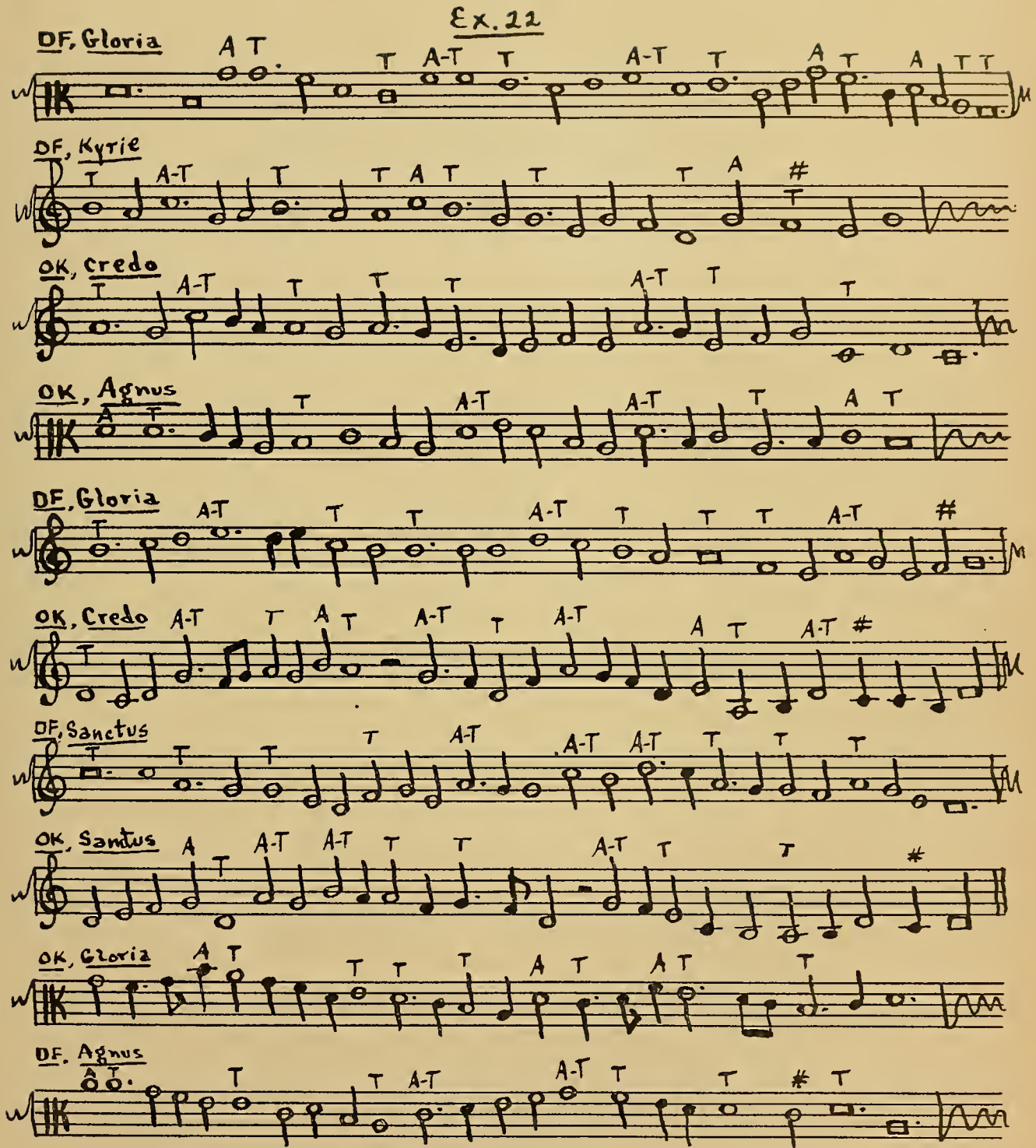
Ex. 20



Ex. 21



We have selected some examples from various places in the Masses which we believe will bring out all the rhythmic and metric intricacies about which we have written. In our analysis of the examples we have taken the liberty of using the words "arsis" and "thesis" in a purely musical sense. Thus, the abbreviations "A" for a note of metric significance, "T" for a note that merely regulates a rhythmic group of two or three beats, and "A-T" when both metric and rhythmic expressions are present, will clarify any and all passages of the linear aspects of the "Caput" music (See Ex. 22, for illustrations).


Ex. 22
DF, Gloria
DF, Kyrie
OK, Credo
OK, Agnus
DF, Gloria
OK, Credo
DF, Sanctus
OK, Santus
OK, Gloria
DF. Agnus

Chapter II

THE CANTUS FIRMUS: ITS FORM, ITS METRIC AND RHYTHMIC STRUCTURE; THE METRIC AND RHYTHMIC FEATURES ARISING FROM ITS CONTRAPUNTAL RELATIONSHIP TO THE OTHER VOICES

* * *

The cantus firmus was to a 15th century composition what a folk-tune is to a set of modern theme and variations. When, in the Middle Ages, a composer selected a popular melody or a phrase from Gregorian Chant for the "take-off of his flight"[51] to more elaborate regions of musical expressiveness, he did so not because he lacked imagination with which to compose a melody of his own, but because of a force motivated by tradition. The basis for the tradition sprang mostly from the psychological point of view; it gave the composer a raison d'être for his music, in that the melody used as the backbone of the work sanctified it through its having been composed anonymously---that it had existed from the beginning of time was the resulting assumption.

In the "Caput" Masses by Dufay and Okeghem we have excellent examples of how two famous minds functioned after having decided upon a cantus firmus---and in this instance, the same cantus firmus. By and large the instances in musical art are rare where two treatments of the same theme produce results of such contrast that the over-all expression gives the effect that no connection exists whatsoever. But this is exactly what happens in the "Caput" Masses. And by comparing the version of the "Caput" theme used by Dufay with that employed by Okeghem---dismissing for the moment the one or two insignificant differences[52]-the mystery shrouding the idiom of contrapuntal thinking which was capable of producing such a variety of ends becomes more clouded than ever.

We do not intend to discuss the unwieldy list of details which could clarify the situation as to how such individuality of expression comes about in the Dufay and Okeghem "Caput" Masses, inasmuch as that is far outside the scope of our study. But we mention this phenomenon since, in a large sense, it is a direct result of certain metric and rhythmic features already explained in Chapter I, and other metric and rhythmic peculiarities to be made intelligible in the course of this and the concluding chapters. The widely varied effects that certain rhythm patterns and metric devices may achieve, notwithstanding the use of a cantus whose rhythmic and metric features are practically the same in both Masses, is not only definite proof of the ingenuity of the respective composers but it also helps to explain the powers of rhythmic and metric expression in the hands of the 15th century creative artist as well as the forces which these devices offer to the composer of our own day.

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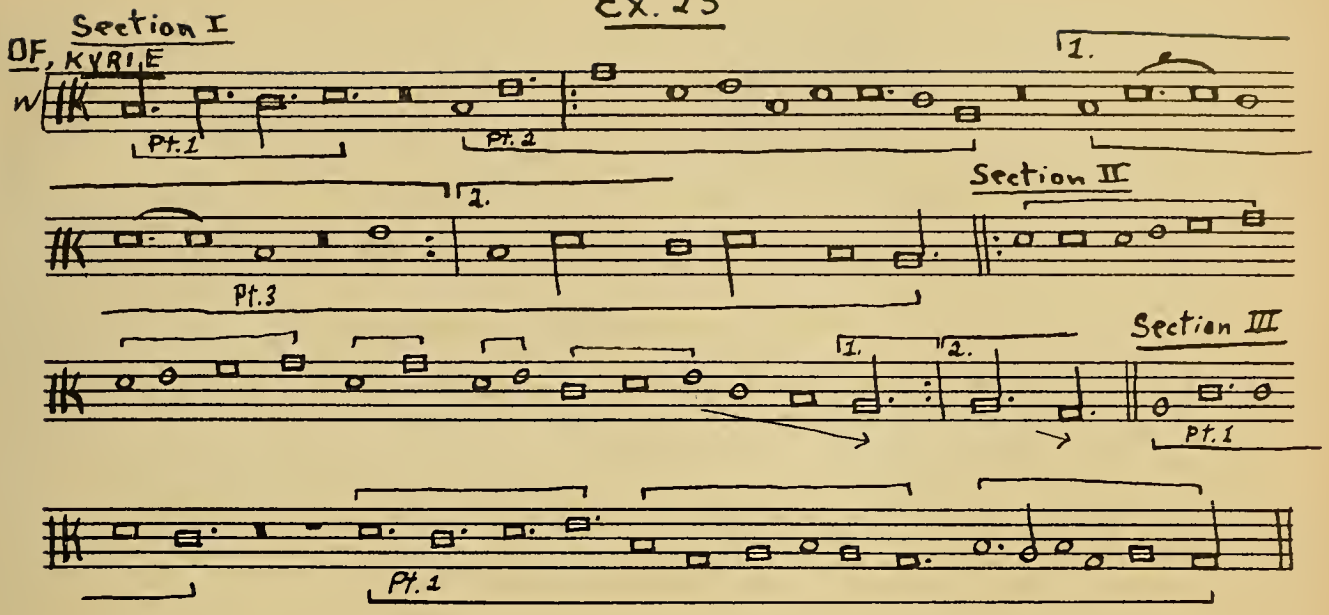
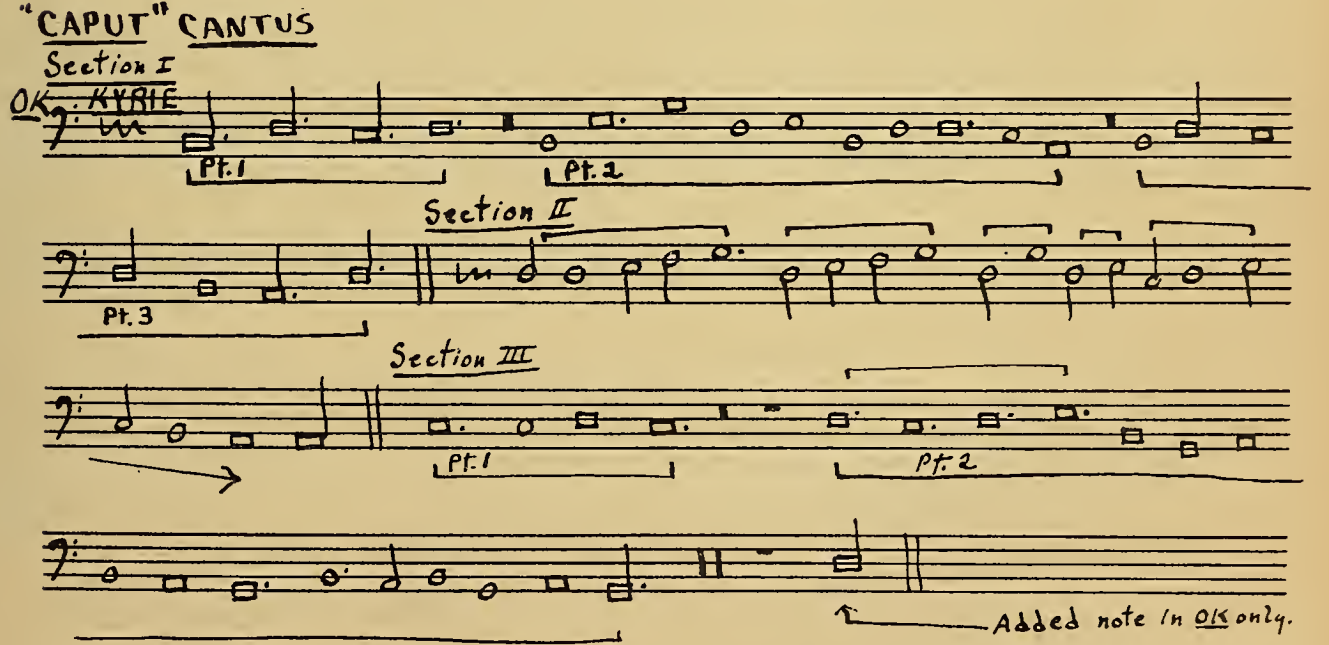
[51] IU, p.xxxii.

[52] See Ex. 23 for both the Dufay and Okeghem versions of the cantus "Caput".

Ex. 23


Section I
OF, KYRIE
W
Pt. 1
Pt. 2
1.
2.
Section II
Pt. 3
Section III
1.
2.
Pt. 1
Pt. 1


"CAPUT" CANTUS
Section I
OK KYRIE
Pt. 1
Pt. 2
Section II
Pt. 3
Section III
Pt. 1
Pt. 2
Added note in OK only.

The "Caput" melody effects three main cadences, dividing the theme into a three-section form. Section I sub-divides into three parts, Section II consists of one continuous phrase, and Section III is a two-phrase structure.[53]

The first part of Section I is made up of four notes, b-d-c-d, executing the rhythmic-pitch expression of conservative undulation. Part 2, however, becomes more active at the onset, skipping from its first note b (and incidentally the same note that began Part 1) to e, then up to g (the highest note in the entire section). The melody of Part 2 continues with a downward turn, gradually floating to a low a (the lowest note in Section I). Although Part 2 has 10 notes against the 4 of Part I, the 10 notes occur in the value of 16 whole notes as against the 4 notes of Part 1 having the time-length of 21 whole notes (in OK). Part 3, beginning on the same pitch b that has functioned already as the starting point for Parts 1 & 2, is merely a rhythmic variation of Part 1 in its first 4 notes, then cadencing by means of falling back to the starting note b, and finally to the lowest note of the section, a, from whence it skips up to the concluding note d. Part 3 takes up a time-length approximating that of Part 1. If we view the three parts from the extent of pitch range in each, Part 1 will be found to extend the interval of a minor third, Part 2 that of a minor seventh, while Part 3 fills the distance of a perfect fourth.

Section I considered as a whole may be thought of as an A-B-A' form. B contrasts with A and A' through its greater expanse of pitch range, its conciseness in time-length, and its greater variance in rhythmic patterns. A' synchronizes with A in a sense similar to B's variance with A. That is, A and A' have practically the same expression from a rhythmic-pitch and -time standpoint, while A and B contrast by means of the same criterion---the first four notes of B consume less time than the first note of A, and at the same time these four notes cover the pitch range of a minor sixth and move in two directions. With respect to the features that are common to B and A' (we are speaking of the greater rhythmic-time activity as well as the more abundant use of pitches), it might be desirable to understand the structure of Section I more perfectly as an A-B-A' (B plus A) form.

In Section II we discover a continuous phrase unified by a rhythmic-time motivic development of the first four moving tones, d-e-f-g. The developmental process continues to grow until at the note c a definite change in direction is brought about, effecting a counteraction to the powerful upward sweep which is advanced to a high degree of concentration before its momentum is lessened in order to bring the phrase to an end. The one-part form of this section stands out as a gem of unified variety.

Section III divides into two parts. After a four-note phrase c-c-d-c, which constitutes Part 1, Part 2 begins with a four-note motive d-c-d-e---a neutral undulating effect---followed by another motive b-g-a-b-a-g of like effect, and then concluding with a b-a-b-g-a-g motive not unlike the preceding tone units. Section III may be considered as a group of four motives, each a variation of the other. The first of these motives, which we have called Part 1, seems to have more the function of an introduction while the three following motives expand upon and at the same time provide a broad cadence line that functions as a close for the entire melody as well as the section itself. The time consumed in Section III is that of 39 whole notes (in OK).

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[53]The analysis applies to both the Dufay and Okeghem versions, given in Ex. 23.

If we examine the cantus firmus in its entirety, several unique features of unity and variety appear: (1) The larger three-section form of the entire work compares with the three-part form of Section I and with Part 2 of Section III. (2) Section II acts as a contrast to both Sections I & III through its one-part construction and its motivically developed phrase. (3) Motivically speaking, Sections I & III have a kinship, i.e. the construction of the motives making up these sections have many relationships in common (the "motivic kinship" of which we speak at this point should not be confused with the "motivic development" feature of Section II). (4) Sections II & III have certain rhythmic characteristics in common, both as to time-patterns and pitches. (5) Section III contrasts and is unified with Section I in the same manner that Part 3 of Section I is unified and contrasted with Part 1 of the same section.

There is an analogy between the phrase setup of the "Caput" Masses and the phrase setup of Gregorian Chant that becomes evident at this point. The cantus firmus seems to regulate the beginnings and ends of phrases and sections of the Masses in much the same way that a word or a group of words performs that function in Gregorian Chant (Ex. 24). The falling quality, thetic, that appears at the end of each part of each section in the cantus firmus coincides exactly with the thetic quality found in the endings of Latin words and transferred over into the musical phrase. It will be noticed how this thetic quality is expressed in varying degrees, depending upon the cadence requirement. Sometimes the cadence is complete, with a definite break such as is found at the end of each section in the cantus firmus and corresponding to the end of a sentence or clause in Latin prose (Ex. 24, (a)). The cadencing of a cantus firmus "part" has its analogy in the word-phrase or sometimes the single word of the linguistic element in Gregorian Chant. The three-section larger structure of the cantus---we might call it the "larger rhythmic form"---has a counterpart in an example of Gregorian Chant having three thoughts expressed in the text, the thoughts themselves being integrated into an over-all thought, but each enjoying a high degree of individuality. In order to point out this striking similarity, we have selected an example of Gregorian Chant which illustrates this larger rhythmic form, and by displaying it in an interlinear fashion with the "Caput" melody we believe that the correlativity of the two will come out to an even greater extent (Ex. 24).

From the point of view of rhythmic-time activity, the "Caput" cantus usually keeps to the background. We have seen how in many instances the three notes move only after long time intervals (Section I, Part 1, and Section III, Part 1). Also these notes fluctuate very little in the matter of pitch change. In fact, the activity of the cantus firmus is so slight in places that its ability to function as a melody in its own right is almost completely lost. There is one feature of the cantus which redeems itself partially in the matter of rhythm. When the long notes appear (especially in Parts 1 & 3 of Section I), they take on a regularity of length and thus accomplish the task of controlling the other parts which are usually quite active at the time. When in Section II the cantus firmus begins to move in notes of smaller values, the cantus then fuses with the other parts by its moving usually in notes of the same values. Here the cantus loses the regularity of basic control that it exercises when it moves slowly, and the cantus as a melody to be heard in its own right disappears once more, this time in favor of a fusion with the other parts (as in Section I, Part 2, in Section II and Section III).[54]

The cantus firmus as it from time to time stabilizes the structure of the whole reminds one of the manner in which the syllables of Gregorian Chant act as

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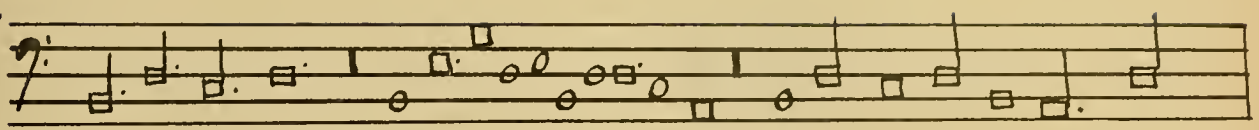
[54] For illustrations of these features, see the complete Kyrie from the Okeghem Mass, on page 88ff.

Ex. 24

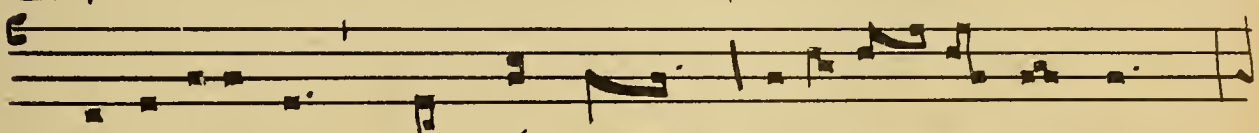
OK, Cantus

I.



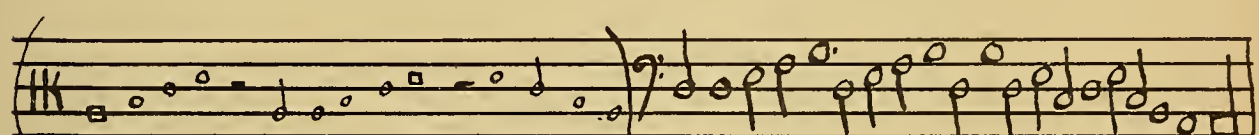
LU, p. 352

(a)



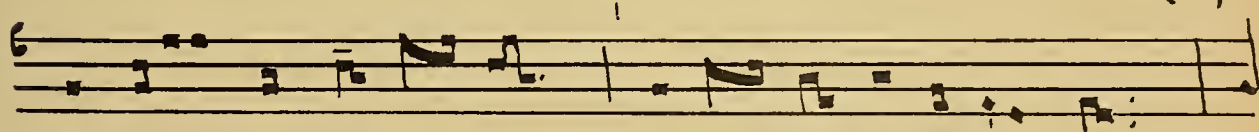
Ex-sultá- vit (1) ut gí-gas (2) ad currén-dam ví- am: (3)

II.



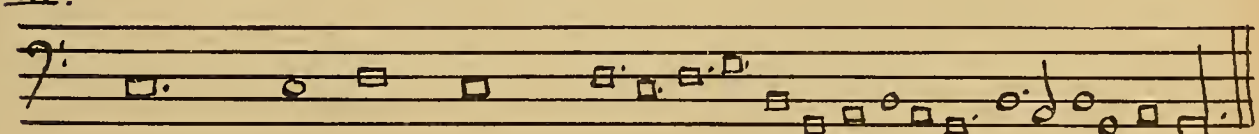
(This phrase is not the cantus firmus proper, but is found in the lowest voice as the Tenor rests.)

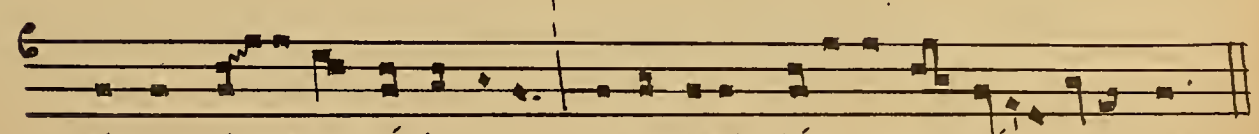
(a)



a súm-mo caé- lo egrés-si-o é- jus,

III.





et occúr-sus é-jus (1) us-que ad súm-mum é- jus. (2)

regulatory factors. At times the notes of the cantus, such as in Section II, become a part of the four-voiced design similar to the combination of syllables with notes in Types I & II in Gregorian Chant (we intend that each voice in turn will be thought of in its relation to the cantus) (Ex. 25).[55] When the cantus moves in widely separated notes, we may rightly compare it with the melismatic Gregorian Chant style, exemplified by Type III (Ex. 26). In the first instance the unity of the voices, or the correspondence of tones and syllables, makes up the style expression; in the second, the voices other than the cantus, or the melismas rather than the word syllables take up the expressive duties.

There is one main difference, however, between the usage of the word syllables as a voice in Gregorian Chant and as the cantus firmus in the Masses. That is the regularity in time patterns found in the notes of the cantus, while the word syllables in either syllabic or melismatic chant make no conscious effort to produce a plan of regular placement in time. We must remember that in the words we have meaning outside the musical meaning as it comes about through various metric-rhythmic devices, which may account for the variance in this connection. The fact that words are units in themselves, although the syllables may be spread out over a wide time space, gives them a power that notes spread out in a similar way do not nor cannot attain. The notes must have other regulations, other "meanings". The simplest device, and the one having a natural affinity, would be the time element. The transference of expression from the word unit or word meaning over into the cantus by means of timing makes a seeming paradoxical analogy to exist between the two connotations.

Up to this point we have been speaking of the cantus firmus in its relation to the other voices of the Masses as if it governed nothing but the smaller and larger rhythmic-time units and the form. When we consider that the "Caput" Masses differ from Gregorian Chant mainly because of the combination of melodic lines rather than the combining of words and a melodic line, we must propound the question as to what if any specific harmonic intervals are found in the combining of melodies, and what connection exists between these harmonies and the cantus firmus. We could admit the possibility that in the 15th century, harmonic intervals were of such a secondary nature that no methodical way of treatment was in practice. It is true, indeed, that the thought of the 15th century era was linear first of all; but this does not prove in the least that certain harmonic intervals were not used at specific points along the route of the composition's progress. If we

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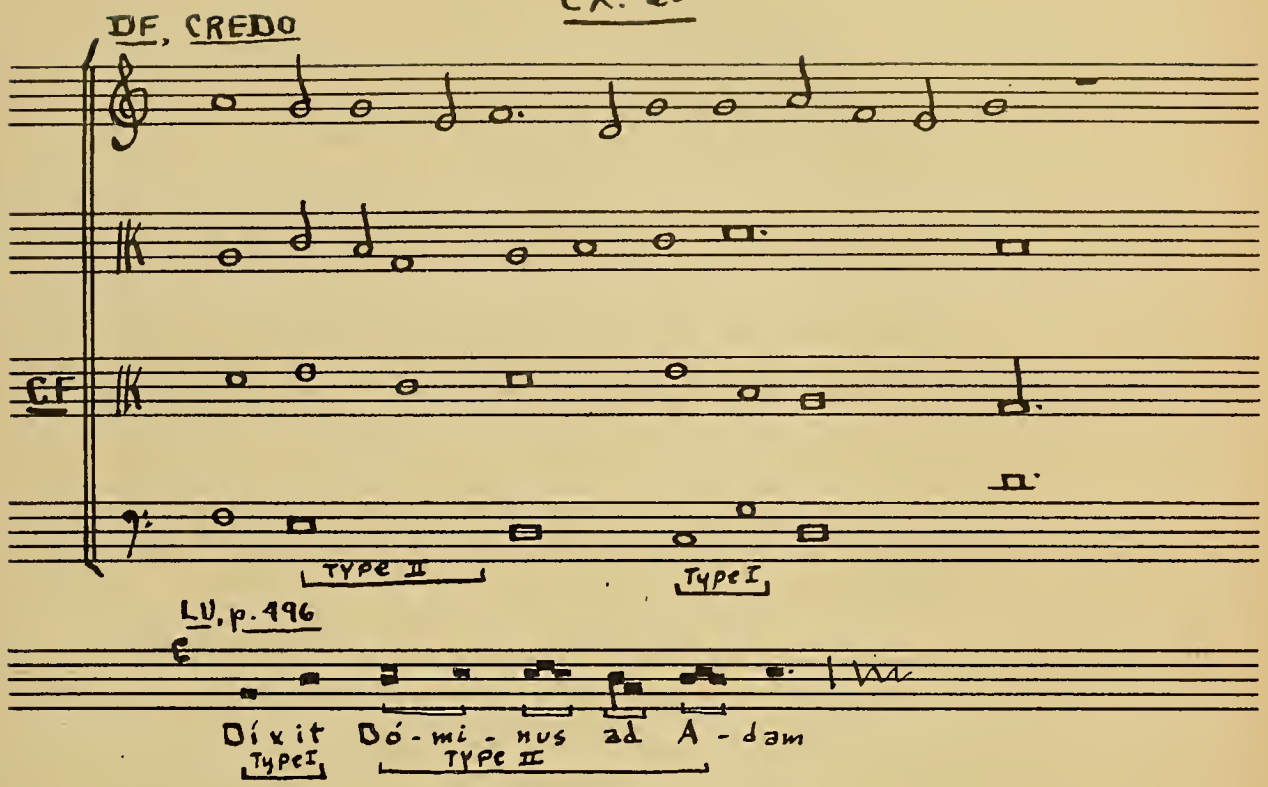
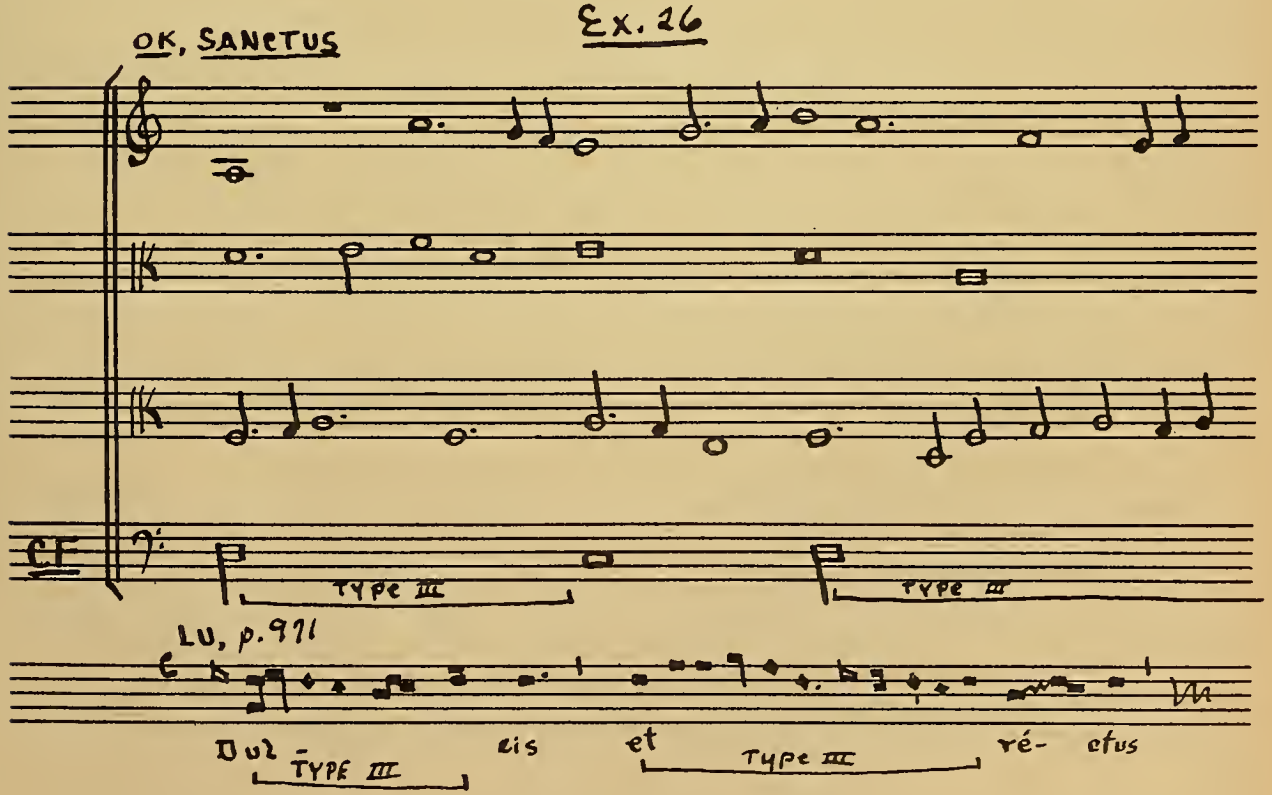
[55]The possibility of considering Gregorian Chant as two-part counterpoint is not too far from reality. In this case the melody line proper would be one voice, the Latin text being the other. Each voice has its own complete expression: the notes in the melody have metric-rhythmic unity and variety arising from the peculiar arrangement of pitches and time values; the words of the Latin text likewise have their own unity and variety through metric and rhythmic patterns of similarity and contrast expressed in accented and unaccented syllables, along with the meanings of the words regarded singly and in their connections. The combination of the two voices produces a third expression, a fusion of melody and words whereby each seeks to express certain elements found in the other, and at the same time clinging tenaciously to its own peculiarities. The fact that arsic and thetic elements in the melody and text sometimes coincide and sometimes run independently provides the best evidence that a high artistry in integrating the two parts was intended and achieved. If the blatant character of the word syllables had not individualized the text line of the Chant, the similarities in expressiveness of each voice would have been recognized many years ago.

Ex. 25


DF, CREDO
CF
TYPE II
TYPE I
LU, p. 496
Dí x it Dó - mi - nus ad A - dam
TYPE I
TYPE II

Ex. 26


OK, SANCTUS
CF
TYPE III
TYPE III
LU, p. 971
Dul - cis et ré- ctus
TYPE III
TYPE III

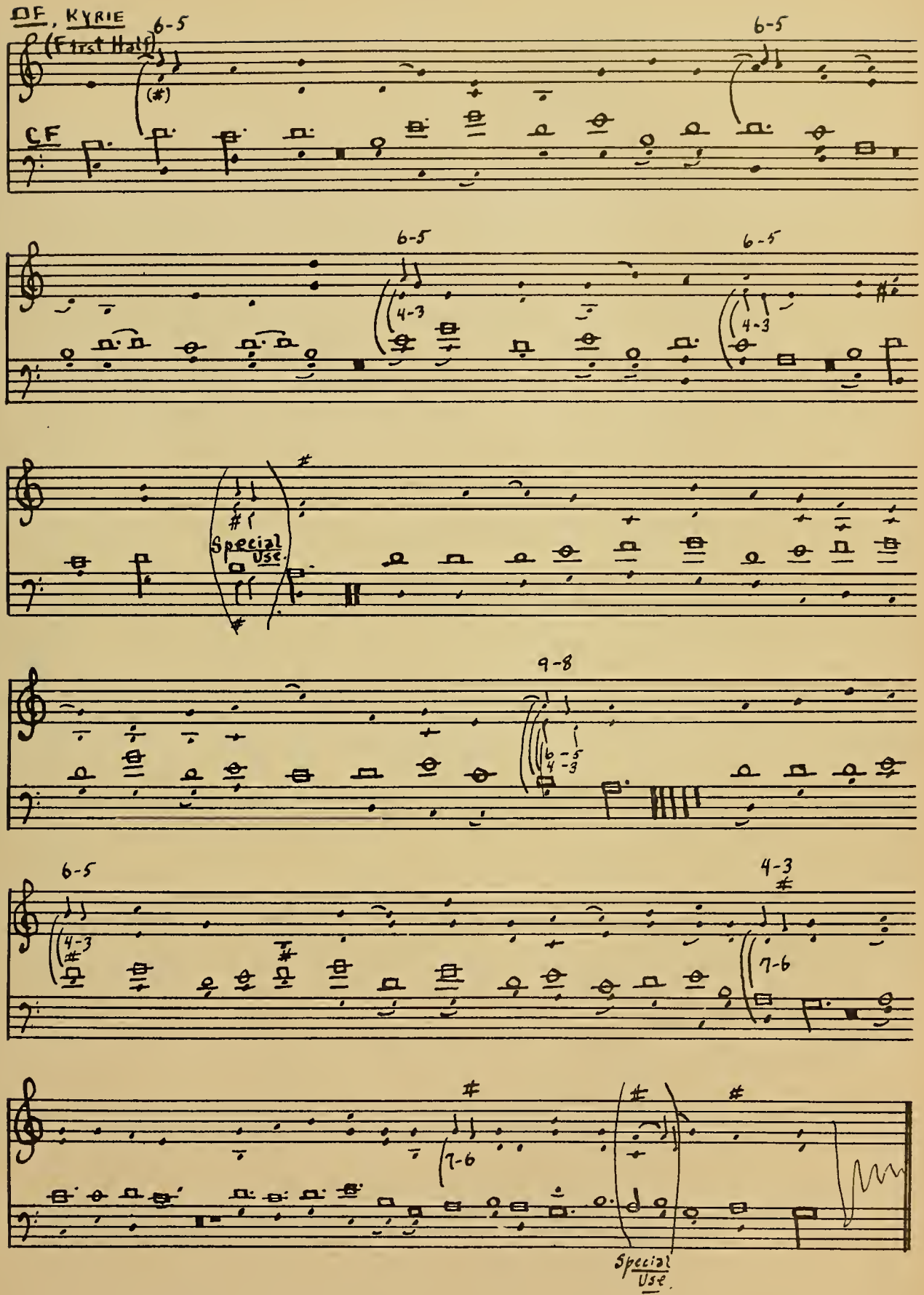
make a detailed study of the harmonic intervals in this music, we will discover that an element of expression appears which is over and above the expressiveness found in Gregorian Chant. It becomes increasingly clear as we inspect the harmonic devices, that the regularity with which they occur give to this expressive element an elevated position in the entire design similar to that held by each voice in its linear expression. It would be logical that any effect the cantus firmus might have on the resultant harmonies will take place primarily at the points where the cantus moves to another note. A view of the harmonies as they appear at these places is given in Ex. 27.

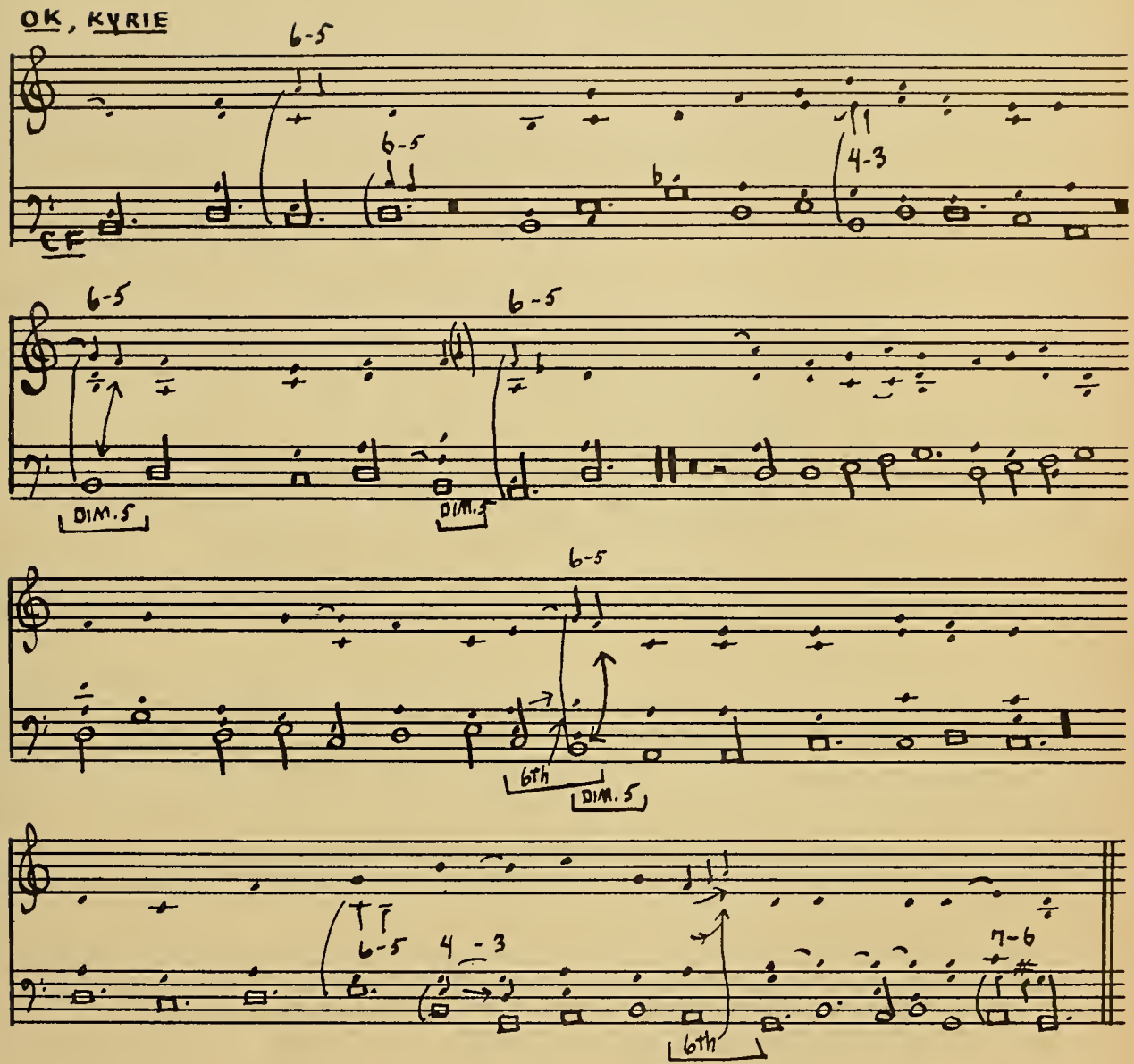
The harmonic plan is clear. The points at which the cantus moves produce the 8/6/3 (which resolves generally to the 8/5/3) and the 8/5/4 (resolving to 8/5/3) combinations come next in numerical occurrence. The other and more dissonant combinations are rare. We shall point out (page 56) how the various intervals of 6ths, perfect 4ths, 9ths (2nds) and 7ths (occasionally the augmented 4th or the dimished 5th is found) were treated considering the cantus firmus or the lowest voice in relation to the individual voices, but when we observe the treatment accorded the perfect 4th in this connection with the treatment it receives when found between voices other than the cantus firmus or the lowest voice we will have to admit a double functioning of this interval as it affects the line. When the perfect 4th appears with the cantus firmus or the lowest voice, it plays the role of instigating movement downwards; when it appears in the other connection, it receives a treatment similar to that given perfect 5ths or major/minor 3rds---that of freedom of movement. The fact that this interval has two functions depending on its location with reference to specific voices, along with the treatment of the 6th and the higher tensioned intervals whenever they are arranged with the cantus firmus or the lowest part, seems to point to the cantus firmus as the regulating factor from an interval point of view to a greater extent than we had assumed at first. Each voice seems to have been written as a counterpoint to the cantus, and where the cantus moves the interval combination possibilities were restricted in such a way that only the combinations given above were the result.

From the treatments of consonance and dissonance as they occur between the cantus firmus or the lowest voice and any other voice, we see two principles at work. One principle is the pure musical connotation of "arsis" from both the harmonic and the melodic standpoints. When the intervals of 6ths or the more dissonant ones are found, the qualities we have already associated with the arsis become expressed: movement, lifted, flexible. The higher tensioned intervals function as a point of accent, and the release of this tension figures prominently in causing a linear expression of movement to be fulfilled, which we have had occasion to note as a characteristic of the arsic concept as it was found in Gregorian Chant. When the more consonant intervals were found, the effect was that of stability, of settling, of no movement. This can be associated with nothing less than the concept of thesis. It is interesting to observe that it was the connection which one voice had with the cantus or lowest voice that made the whole harmonic interval combination take on a state of activity, while the thetic idea could not be traced to any one voice. The idea of movement became identified more closely with the melodic line through this usage and the inflexible or thetic found an expression in the composite sound resulting from 8/5/3 combination rather than from the relationship of any one voice to the cantus. (See Ex. 27)

There remains but one important connection between the cantus firmus and the other voices: What relations do each of the voices have in the interim of time between notes of the cantus? It is in these interims that chaos in regard to

Ex. 27


DF, KYRIE
(First Half)
CF
6-5
(#)
6-5
6-5
4-3
6-5
4-3
Special Use
9-8
6-5
4-3
6-5
4-3
7-6
7-6
Special Use


OK, KYRIE
6-5
6-5
4-3
CF
6-5
6-5
DIM.5
DIM.5
6-5
6th
DIM.5
6-5
4-3
6th
7-6

rhythmic-pitch patterns, rhythmic-time patterns and (as an additional feature which we have just pointed out) rhythmic-harmonic patterns seems to dominate expression. In spite of the aforementioned three-fold apparent freedom there is a basic plan, however, for the treatment of the various rhythmic expressive devices. Again we find consonant intervals making up the majority of combinations in the interims. But dissonant combinations are sprinkled in a fanciful manner between the consonances, making the music abound in little protuberances of expressive accents. In contrast to the manner in which the intervals of perfect 5ths and major or minor 3rds are formed by the moving voice---i.e. the notes making up these intervals with the cantus move either conjunctly or disjunctly almost at will---the dissonant intervals, along with the 6ths and perfect 4th which, because of their similarity in treatment, may be classified as temporary dissonances, require one of several distinct methods of treatment:

The upper voice will:

(a) Approach the note making the dissonance conjunctly, withdrawing disjunctly,
(b) Approach the note making the dissonance disjunctly, withdrawing conjunctly,
(c) Approach and leave the note making the dissonance conjunctly,
(d) Approach the note making the dissonance conjunctly, repeating the note which at that moment becomes consonant with the movement of the cantus firmus.

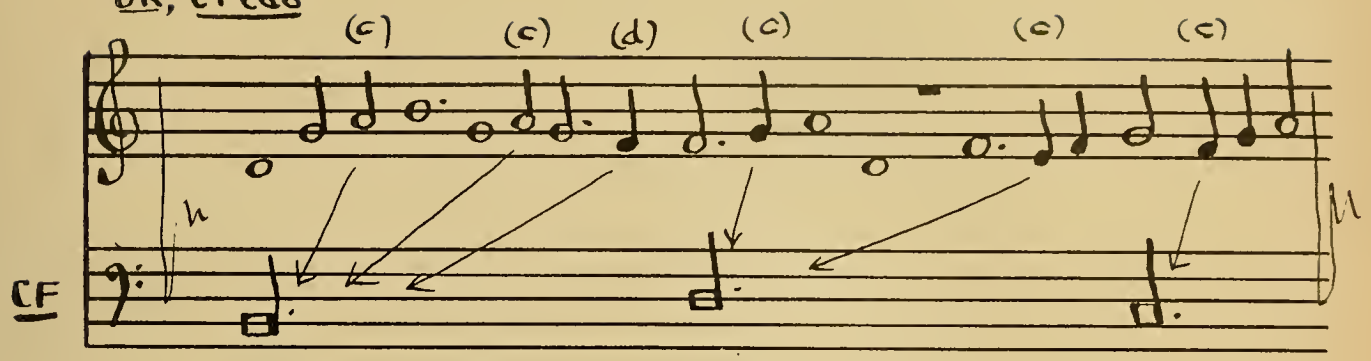
Illustrations of the treatments given to dissonance listed above will be found in Ex. 28.

Continuing our application of the arsic and thetic concepts to their musical connotation, we get a more complete picture of the possibilities after we observe the ways in which they arise from the cantus firmus in a harmonic connection. The primary accents in the Latin text of Gregorian Chant seem to be taken over by the more highly tensioned harmonic intervals in the Masses, and at the points where the cantus moves. Secondary accents in the Latin text have their function taken over by the dissonant combinations occurring in the interims between notes of the cantus. The time- and pitch-movement elements along with the consonant harmonic combinations, however, combine to present the thetic concept. The groups of two and three notes and their movement up or down in a well-ordered manner hold the music together and serve as rhythmic expression in as significant a sense as found in melismatic Gregorian Chant. The dissonant feature of accent may be regarded as a substitute for the arsic primary and secondary syllables in the Latin text.

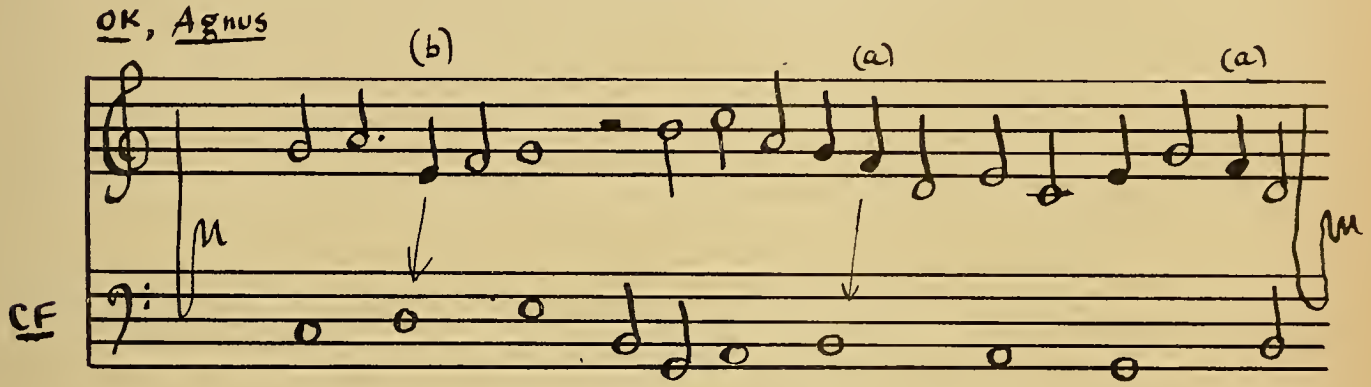
The cantus proves to be more of a rhythmic regulating or designating factor than it does a metric. Always deciding the length of a phrase and always keeping each of the other voices in close touch with itself either through harmonic interval or rhythmic pattern integration, the cantus proves to be no mere arbitrary excuse for composing a composition from a traditional standpoint. The traditional value which the cantus has is completely overshadowed by the source of life it contains for all elements of the music. By and through its larger structure, the larger form of the Masses is set up, the larger metric plan comes into being, and

Ex. 28

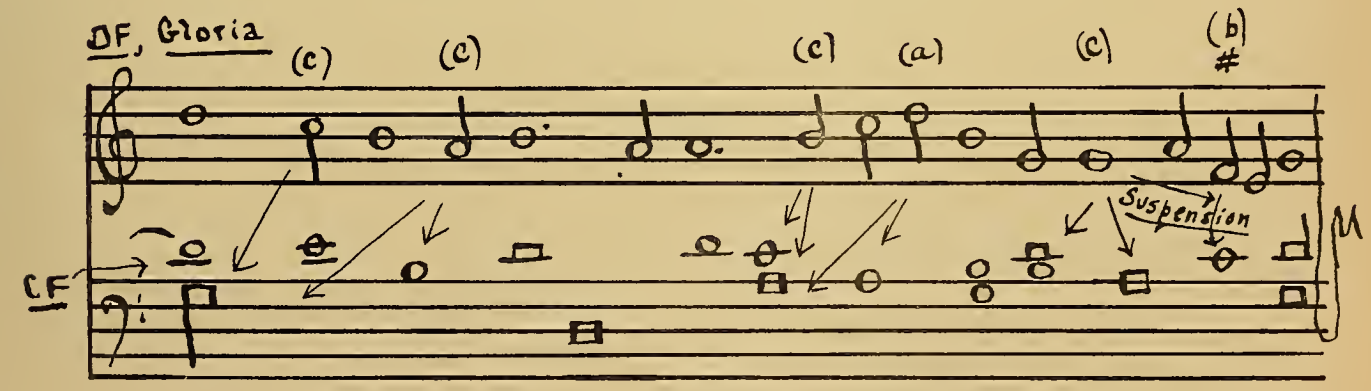
OK, Credo



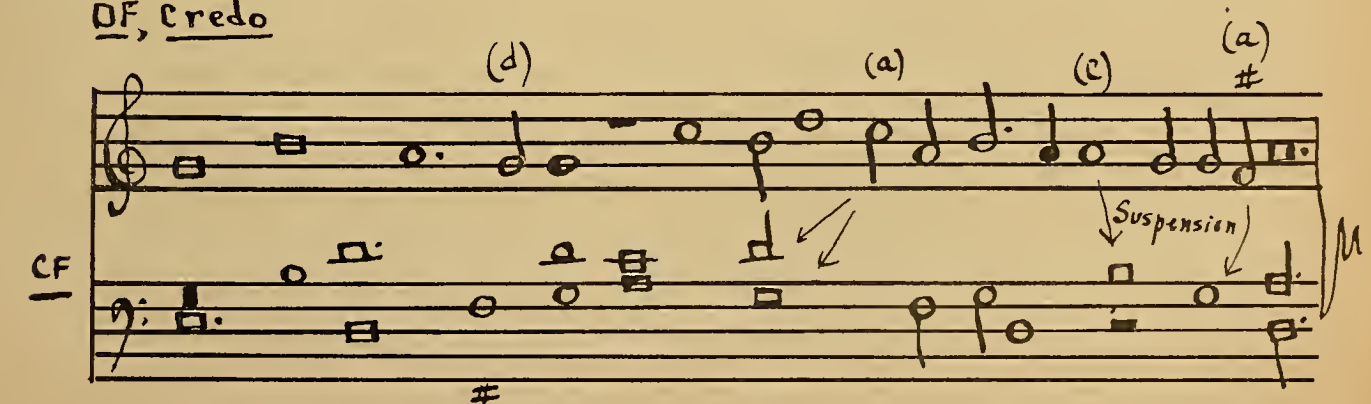
OK, Agnus



DF, Gloria



DF, Credo



the larger rhythmic implications are brought out in relief. It is the center of gravity about which all voices move and to which they owe their existence. [56,57]

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[56]-We shall not discuss the pure motivic correspondences between the cantus and the other voices, since they would not add to the clarification of the problem of meter and rhythm to any great extent.

[57]-Before we conclude this chapter, we think it would be of interest to comment on the frequent usage of the interval of a diminished 5th, b/f, in the Okeghem Mass. This subject has been treated in the paper contributed to this volume by Virginia Seay under the aspect of modal orientation. Our remarks here refer to the situation from the viewpoint of voice leading. It is because of the cantus being in the lowest voice in the Okeghem Mass (in the Dufay, the cantus appears in an inner voice) that the phenomenon of the diminished 5th occurs frequently, and the reason that it occurs at all is on account of the constant use of the pitch b. The situation as we see it reduces itself to this: In the resolution downward of the voice forming an interval of a 6th with the cantus firmus b (i.e. g), there are two possibilities, either f# or f. The f# when regarded as musica ficta or if inserted by the composer brings up all kinds of difficulties with the other voices. The interval b/f was undoubtedly adopted as a temporary imperfect consonance, and in this Mass its use is more than accidental---it finds an intentional expressive position and becomes an individualizing feature for the entire work.

Chapter III

THE OVER-ALL METRIC AND RHYTHMIC PATTERN

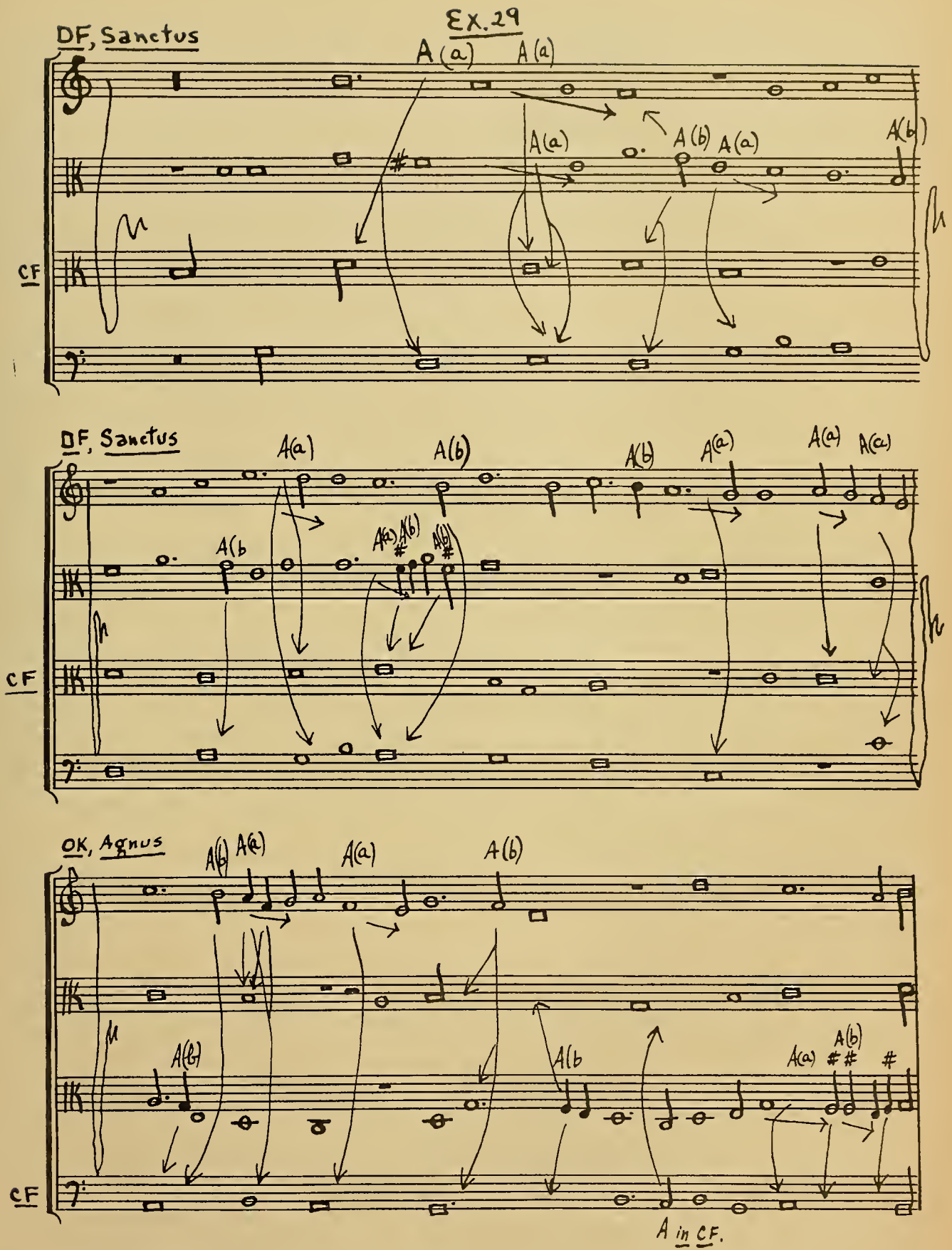
* * *

Let us digress for a moment from considering the details of metric and rhythmic features in the "Caput" Masses and turn our attention to the general effects which arise from the music as a whole. The impressions that stand out in this connection are: (1) The excessive fluidity of melodic movement from both the time and pitch viewpoints. There seems to be a constant surging forward of sounds in time followed by a relaxation, this being accompanied by similarly excessive rises and falls of the melodic line, or by a more moderate degree of pitch undulation. (2) The complexity of the harmonic scheme, at times the melodies arriving at distinctly noticeable consonant combinations, while in other instances they seem to be locked in a complex struggle of dissonant vs. rhythmic-time pattern elements. (3) Cadence points are reached with the utmost reluctance to terminate. This is less noticeable within a section (i.e. the section as determined by the cantus firmus), because of the practicability of keeping the music in a state of motion, than at the end of a section where the cadence effect is prolonged until the very last drop of rhythmic-time and rhythmic-pitch movement energy is exhausted. (4) The peculiarity in employing the device commonly known as the "suspension", especially in the cadence. The instances where the suspension device is not found in the cadence are rare; this cliché almost serves warning to the listener or performer that cadence procedures are under way.

The characteristic of over-all continuity is brought about by the scrupulous use of interrelated interval tensions combined with movement by pitch and time. The harmonic intervals of the perfect 5th, the perfect 4th (when appearing between any two upper voices), the unison and octave, and the major and minor 3rd, appear to be of little or no significance in expression of time movement. An examination of the music where these intervals occur shows that time-movement takes place mostly through the time values of the notes and the predilections of one or more voices to rise or fall as the result of some former considerations in the lines themselves. When the major or minor sixth appears (since we are speaking of the over-all occurrence of this interval, the possibility of its resulting from the combination of two voices neither of which is the cantus firmus or lowest voice now becomes an additional feature), the upper voice usually resolves down, bringing about the interval of a perfect 5th (in the Okeghem, the diminished 5th appears frequently, as we have already pointed out in Chapter II). The suspension usage of the perfect 4th is found between voices outside the jurisdiction of either the cantus firmus or the lowest voice, and it seems that the lower voice in these cases functions temporarily as the cantus. Similarly, the intervals of higher tensions (such as the augmented 4ths, diminished 5ths, the 7ths, and 2nds) generally resolve down if they are of the longer variety of note value, while if they are short in time value and are of the neighboring or passing variety they move either up or down.

To be more specific in the matter of the higher tensioned intervals listed above, the treatment follows one of two plans: (1) Where the note is of the double whole, whole, and, less often, half-note variety, the interval affects the movement of the upper voice in time. (2) When the dissonance arises from the moving voice only, and the note is of the half, quarter, or eighth variety, the expressive result is more of the coloring variety and is seldom the cause for stimulation of movement in any voice. In Ex. 29 we have quoted short passages from various places in the two Masses which will disclose at the points marked (a) how the first plan of treat-

Ex. 29


DF, Sanctus
A(a)
A(a)
A(a)
A(b)
A(a)
A(b)
CF
DF, Sanctus
A(a)
A(b)
A(b)
A(a)
A(a)
A(a)
A(b)
CF
OK, Agnus
A(b)
A(a)
A(a)
A(b)
A(b)
A(b)
A(a)
A(b)
CF
A in CF.

ment finds a practical fulfilment, i.e. how the dissonance of the longer time value instigates movement in a voice, and at (b) may be seen how the very same intervals are treated under the second plan---how the movement already in existence seems to force notes of smaller value through the dissonances.

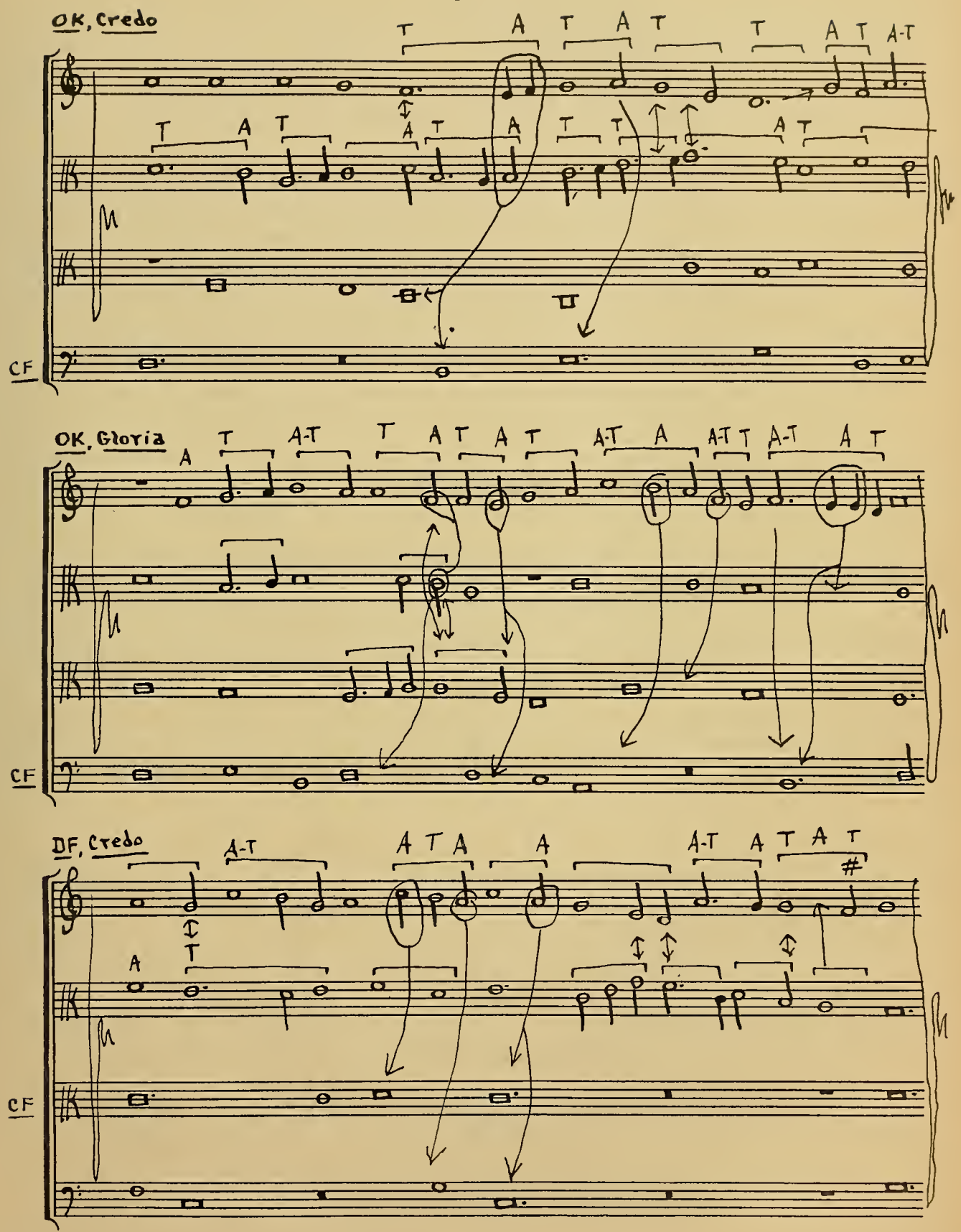
It is the higher intervallic tensions found at the points marked (a) that tie up with the concept of primary arsis or primary accent in the same manner as the arsic relationship existed between the cantus firmus or lowest voice and any one other voice, as we have already explained in Chapter II. And, of course, the resolution of the voices brings about the thetic portion of the phrase or of the small rhythm, and finally arives at the exact point of thesis from which the phrase begins a rise to another higher tensioned interval, or it may be that the cadence had been effected already when the point of thesis just mentioned was reached.

The expression of movement and rest, arsis and thesis, all along the route, with a constant fluidity of the voices creating the dissonant intervals followed by the same or different voices creating the more consonant intervals, is the underlying feature of the music as a whole in its larger rhythmic aspect. This, in turn, harmonizes perfectly with the primary accent in the text of Gregorian Chant being followed (immediately or with one syllable intervening) by the final and thetic syllable of a word. We might even call the plan of dissonant treatment under (a) the larger metric setup of the Masses, and the points where the thesis is reached the larger rhythmic setup; in the first instance, Method II of Latin prose analysis would be analogous, while in the thetic setup Method III of Latin prose analysis would compare favorably. Furthermore, we might even call the treatment given to dissonant intervals under this plan the larger arsic concept, and the countertreatment which we shall discuss in the following paragraph would be known as the smaller arsic concept.

The passing or neighboring variety of dissonance exemplified in the illustrations of Ex. 29 at the points marked (b) are related to the secondary accents in Latin prose, "secondary arsises", as it were. We have seen how in Latin prose the secondary accents were more or less contingent upon the primary accent and the quantity of syllables that preceded the accented syllable. They existed as protuberances within the flow of the rhythm, not having nearly as powerful an effect as the primary arsises. Although these secondary dissonances appear in a relationship with the cantus or lowest voice, they seem to be more noticeable between the other voices, especially the upper two. They assume thereby characteristics even more expressive because of their being divorced from a regulation by the cantus firmus: we may consider them as the farthest extent to which the composer may go in the matter of freedom.

Acting as the antithesis to dissonance in regard to meter and rhythm is the consonant interval. The fact that there are possible many more dissonant combinations and varieties of treatment of dissonant intervals than there are consonant intervals makes the points of repose (as seemingly expressed by such interval combinations as 8/8/5, 8/5/3, or 8/5) assume greater stability of expression as progenitous of the thetic concept. Consonant combinations have a two-fold occurrence in a manner similar to the dissonant occurrences; (1) In the larger thetic concept, they appear with the cantus or lowest voice at regular intervals (or immediately following), as indicated in the Kyrie of the Okeghem Mass by the wavy barline:(Ex.35) We are not too much concerned here with the expression of arsis as it occurs from time to time at the point where the regular time intervals take place, because the effect of consonance among voices besides the two that might display the sixth give a thetic quality to the point reached in spite of the temporary dissonance which one feels is as good as resolved even before the action is completed. (2) The smaller thetic concept appears outside the cantus or the lowest voice, as did the

Ex. 30



smaller arsic concept. Along with the subdivisions---those consonant combinations occurring in regulated time intervals between voices other than the cantus, and indicated in the Okeghem Kyrie by a straight barline---sprinkled all along the course of the music are moments of settling which correspond to the secondary thetic syllables in Gregorian Chant. The secondary consonant intervals seem to be a perfect realization of the Solesmes expression, " . . . le moment où le mouvement . . . touche terre . . ."[58] as it now receives a musicical significance:

The occurrences of the regularly placed consonant combinations became the point of confusion to the 19th century musicologists who, as we have said, did not differentiate between meter and rhythm. According to the music of the harmonic idiom, the chords of 15th century music that appeared at places corresponding to the first beat of a measure in barred music would make up the metric plan of the music. But the 15th century creative thought neither intended that the combinations appearing thus should be regarded as metric in nature, nor did they think of the intervallic combinations as chord progressions in the sense of progressions in the harmonic idiom. The problem of interval tension as it affected the melodic line was important to the composers of the Middle Ages, and in some respects the chords which we do find from time to time were as instrumental in carrying out certain arsic and thetic concepts as were the fulfillments of these concepts by the lines themselves. Intervallic tension meant to the 15th century composer a means of producing arsic or thetic points of movement and rest respectively. Certain intervals brought out the features of accent, and in the process of relieving this tension, thetic features were brought about. But the arsic concept should not, therefrom, be regarded as synonymous with rhythm because it causes movement. It is the regulation of movement, not the cause, that is the fundamental meaning of rhythm. The arsic concept may be likened to energy pressing to escape; the thetic concept regulates the escape of this energy through movement of time and pitch. Thus, accent in the 15th century style was related to Gregorian Chant in that the intervallic tensions which were both the cause and the result, depending on the point of view, came at irregular time intervals, and these in turn were directed into channels of rhythmic regulatory devices. The fact that accent was taken over by the chord in the 19th century idiom made it extremely difficult for musicians living in the midst of such music to understand another kind of meter, another kind of accent---music that had chords, and chord progressions seemingly, but which was conceived under different aesthetic principles.

One of the truly phenomenal aspects of the over-all texture in the Masses is the manner in which rhythmic time-patterns of two or three beats in any one voice synchronize with, or occur at variance with, similar two- and three-beat groups in other voices. There appears to be no recognizable procedure in this connection, except that the existence of this state provides evidence for the proof that the melodic line in itself was of first importance. It seems that in this procedure the 15th century composer utilized all the fancies of rhythmic pattern combinations that his imagination was capable of devising. Even groups of two and three beats with different fundamental beat-unit values are to be found. It is the cooperation of two voices from time to time in their thetic expressions (the beginning of rhythmic groups) that gives a semblance of law and order to the otherwise extremely confused conception. But, as we have said, it is just this state of affairs that causes the music to have an over-all expression of continuity. Example 30 illustrates the many complicated patterns that result from overlapping of arsic and thetic elements as they occur in the various voices. Besides observing this phenomenal feature, it will be interesting and profitable to notice the correspondence between arsic and thetic elements as they appear in the voices considered as sep-

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[58]PR, p.xi.

arate entities with these same elements arising from the harmonic pattern of consonance and dissonance.

Now we can look back over the various devices of the over-all metric and rhythmic aspects discussed in this chapter and see the perfect analogy to the metric and rhythmic features of Gregorian Chant. We brought out, first of all, how the larger metric and rhythmic plan caused by interval tensions might be compared with the larger metric features in Gregorian Chant arising from Method II of Latin text analysis, and the larger rhythmic features arising from Method III. In the metric setup, it is the higher harmonic interval tension occurring intermittently on the first interval combination of the barred divisions, as we have outlined in the Kyrie of the Okeghem Mass, that produces accent. The large thetic or rhythmic groupings always appear at the first harmonic combination after the bar, or sometimes (as we pointed out on page 42) slightly thereafter, while between these regularly timed points of arsis or thesis the rhythmic and metric subdivisions are found. The combination of arsic and thetic elements, such as occur on the first combinations after the bars, as well as the overlapping rhythmic patterns, are closely connected with metric and rhythmic happenings of a like nature appearing between the melodic and text elements in Gregorian Chant. The thetic elements give stability and regulation to the music, hold it together and provide the unity. The arsic elements, the accents, provide the energy for the movement of the parts; they do not hold the music together except perhaps as recurring points of similarly sounded points of emphasis. They do not regulate the music as far as time is concerned, but they may occur at the same point in time with thetic elements. The complexity of arsic-thetic elements makes the music appear unregulated, this being true more from the listener's standpoint than from the performer's. It may well be that this music should be completely understood as law and order only through its performance, and when merely listened to only a small fraction of the aesthetic content is obtained. At least the combinational results seem to justify such a conclusion.

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We have attempted through the process of unfolding certain aspects of the metric and rhythmic features of the "Caput" Masses to further validate the hypothesis which we advanced at the beginning of this study. At every point along the way, we have tried to prove either by specific statements or through inference that the music of the 15th century---taking the "Caput" Masses as the epitome of such---had to be viewed under the metric and rhythmic conditions found in the music itself and not the conditions prevailing in the metric-rhythmic setup of the harmonic idiom. We believe that the careful scrutinization of the Solesmes Theory as it is applied to Gregorian Chant and then carried over without difficulty to the 15th century style has proven the accuracy of our hypothesis from both a historical and a per se standpoint. If the 15th century music is to be thought of as the 19th century musicologists believed right, that it was an attempt on the part of meaningful but misguided composers to make music sound like that of the 17 and 18 hundreds, then the music may be dismissed as consisting of nothing more than attempts to grasp at an unknown quantity. But we hold to the theory that the music of the Middle Ages had an expression all its own, that it lost this expression when the harmonic idiom took over and dominated the music scene for several hundred years, and that this lost expression can be regained only by dismissing the aesthetic concepts of 18th and 19th century music and seeking the concepts of the earlier era.

The main difference between these concepts lies in the separation of meter and rhythm, which was never done in music of the harmonic idiom for reasons we have pointed out. The metric-rhythmic ideas of the harmonic idiom when compared with

those of the 15th century contrapuntal style may be said to be analogous with poetry and prose. Just as rhythm and meter appear more often than not in regularly timed patterns in poetry and harmonic music, in a contrasting manner the rhythmic and metric features in prose and 15th century music appear in irregularly timed patterns. But we must not confuse "regularly timed" and "irregularly timed" patterns; the principle of variety and unity in music is not defined by either of these principles. They are merely two aspects of one expressive end; while if they are regarded as representing the right or the wrong of musical expression, then they preclude the possibilities of expression to any except a single and highly stylized idiom.

A second difference which we feel is important in the substantiation of our hypothesis is the attitude toward music art in the 15th century with that of the 19th century. In the former period music was undoubtedly composed for the purpose of aesthetic enjoyment for the performer; the latter period was concerned with aesthetic enjoyment for the listener. As an example, a five-voiced composition of the 15th century was intended primarily for the enjoyment of the five participants concerned. The combination result of these voices was secondary in the expressive setup. A five-voiced composition in the style of the harmonic idiom meant that each participant contributed a small amount, the resultant ensemble being the expressive end.

Thus, it is a shift in analysis from the subjective to the objective which aids in solving the metric and rhythmic problems of 15th century music. The mere perusal of such a procedure has demonstrated the validity of the results in the study we have undertaken.

A CONTRIBUTION TO THE PROBLEM OF MODE IN MEDIEVAL MUSIC

by

Virginia Seay

Preface

The problem of mode in early music is all too often considered to belong only to the province of music theory, as something somehow divorced from the music itself. In the beginning, of course, modal theory necessarily came about from direct examination of the music at hand, as an attempt to understand the orientation factor of that music. The resultant data suggested certain classifications of orientation patterns, or modes, corresponding fairly well to the musical usage of that time, from which it had sprung directly. These modes in turn were natural material for the mediaeval scholar, who in trying to formulate a rounded and tidy picture of God's universe, turned to these classifications as being more manageable than the actual music itself. Another important factor was the tremendous respect in which Greek theory was held, the mediaeval theorist working under a feeling of obligation to harmonize actual musical practice with that theory in some way. Thus modal theory came into a life of its own, and the emphasis shifted from direct examination of the music to an interest in systematizing the modal material so that it might best be fitted into an orderly pattern. The history of mediaeval modal theory is therefore largely the history of the growth of a mathematic-like system, little concerned with the parallel growth of musical expression. The Chant was referred to for "examples" to prove a theoretical point, rather than for material on which to base the theory, and attempts were made to emend those chants which did not fit into the modal system.[1] It is little wonder that in this period music was considered very closely related to mathematics in the ordered fields of knowledge.

For an understanding of the problem of mode in mediaeval music, this theory cannot be entirely disregarded. It is hard to evaluate the effect of this "autonomy of theory" upon the mediaeval composers; certainly in many cases they were influenced to "obey the rules", and thus preserve the musical status quo. But musical growth was inevitable, and with the theory in the position of prime importance, the changing nature of the musical processes produces a state of confusion as far as the theorists are concerned. I should like, therefore, to use an approach which comes primarily through the music itself, accepting the systemization of the theorists only when it appears to shed light upon the vital musical processes. I do not propose, by this, to retrace the steps taken in the history of modal theory, and reclassify music of modal orientation, on a statistical basis, into a system considered from our twentieth-century longer-range view. This would be a step forward only in that we now can consider the period of the mediaeval modes as a closed one, and could collect evidence from the whole period, without the difficulties presented by constantly changing manifestations of this modal basis of orientation. But in the interest of being able to apply the results of the study of a previous period to problems of music today and music of the future, I should prefer to place the emphasis upon the nature of mode in the individual piece of music, treating it primarily as a working basis in the composition, trying to understand the nature of this orientation factor, as of more lasting importance than its system.

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[1] Gustave Reese, Music in the Middle Ages, 1940, p. 159. "The Cistercian reform (first half of 12th century) brought about a multitude of transpositions, whether to avoid inadmissible chromatic alterations or an excess of phrase-closes on degrees other than the final of the supposedly prevailing mode or to bring within the permitted range passages that roamed too far."

The Mode in Monodic Plain Chant

As the vocabulary of musical terms is frequently confusing I should like to preface my work with some definitions, in order to avoid misunderstanding at the beginning.

The term specific is used in the sense of that which pertains to a species: Specific forms, for instance, would be those that fall within the fugue or sonata form, or any other such classified species; a specific mode would apply to the Dorian, Lydian, or other classified modes. Special applies to those aspects of music which can not be classified, and which, distinguished by some unusual quality, may be considered unique.

Webster's dictionary gives as the definition of the term musical mode: "An arrangement of the eight diatonic tones of an octave according to one of certain fixed schemes of their intervals." I have found this definition far too narrow for practical use in examining early music, and at best it applies only to the specific mode. I prefer to go back to the root of the word, modus, meaning manner, and consider the mode of a given piece to be the characteristic flavor which arises from the use of a chosen number of tones arranged in a chosen and characteristic manner. If this characteristic flavor is like that of many other pieces of music, so that it has been classified, the mode is specific; if it is unique, it is a special mode. In this way, every piece of music may be said to have a mode, just as all music has a form, or a rhythmic scheme.

An examination of music theory of the fifteenth century reveals that two distinct factors were considered in discussing the mode of a piece of music. The first of these may be considered as the general frame of reference, and it concerns the octave species,[2] the range of the melody, and the final. The second factor concerns the phrasis, as Glareanus calls it, or the characteristic melodic features of the music. This second system is less rigid and more open to varying opinions than the first one, for it deals with the vital process of the music itself; in general, certain characteristics were ascribed to melodies in each of the modes. This was the earlier system of classification, probably stemming from the oriental method of grouping melodies according to certain structural features in common[3], and it was most evident in the elaborate Tonalia of such theorists as Hucbald, Odo, de Muris, and Odington. The octave-species system of classification, taken from the Greeks, was later combined with (or imposed upon) the oriental, and by the time of Glareanus, comparatively little of the earlier concept remained, although it was recognized that in many cases the octave-species system was not sufficient to cover the musical facts. The result was that many Gregorian melodies were classified unsatisfactorily into a mode to which they presented rather striking features of exception. Analysis of these "exceptional" chants shows the difficulties encountered in labeling them, and suggests the present approach to the problem, which is somewhat different from that of the mediaeval theorists.

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[2] Ibid., p. 152. "Although the mediaeval theorists of the West retained the Greater Perfect System..., the octave-species, as understood by the Greeks, had, in the West as in the East, ceased to have any meaning. The tonal material offered by the gamut, however, was eventually grouped into a series of eight octave-scales having modal significance."

[3] In a lecture to the Greater New York Chapter of the American Musicological Society (fall 1944) Oliver Strunk, discussing the intonation formulae of Byzantine Chant, has shown that chants beginning with similar melodic patterns are grouped into the same mode.

The chant "Tenebrae Factae Sunt",[4] with its F-f range and B final may be used as an example here. It is possible to place this chant into a specific mode,[5] but not without the reservation that it is "exceptional" to the general rule. On the other hand, if it is treated as belonging to a special mode---the determination of which is judged on all the musical factors present---there is no need to speak of exceptions, for they are all included within this special nature of the mode.

The most immediately apparent modal quality of the Tenebrae is its two-level aspect, sections I, II, and IV comprising the low level, covering the range F to D, and III and V, the high level, the range B to F.[6] (Ex. 31) In each case there is a definite break between the sectional levels. The first section (I) begins on G, and stresses the F-C range of a fifth (Ia). The second part (Ib), starting on G, covers the range of a fourth, G-C. Section IIa, although beginning with F, makes use primarily of the range G-D, and ends on G, while in IIb the reverse process takes place, with a G-D range, ending on F. IIb́ covers the F-C range again.

Section IIIa jumps to the high level, using the range D-G, with C used once as a sort of lower auxiliary tone. In IIIb there is a shift from the F-C range to the group B-E, and the section ends on B. Section IV returns to the original low level, IVa covering the range F-C, and IVb the range G-D. The last section (V) again makes use of the high level, Va and Vá stressing the C-F range, with B used twice as an auxiliary tone. Vb has the range B-E, but actually winds around C and D, the extreme notes giving the impression of auxiliaries; Vb́, the range B-E, extended to F at one point, and ending on B.

When these two "levels" are added together, they result in an octave, but this octave is never covered as a unit. The units are the groups of fourths and fifths, and the music is actually built up by these, the octave arising only incidentally as a result of the combination of the smaller units. (The theory of the 15th century, as set forth by Tinctoris, shows more insight into the musical process here than does Glareanus, of the 16th century, who saw the smaller units merely as divisions of the octave; Tinctoris, however, speaks of the octave being formed by the species of fourths and fifths.)[7] And it is the characteristic arrangement of these smaller units rather than the range, the octave species, or the final which imparts to this chant its own peculiar flavor, or as I interpret it, its special mode. Although we can not give a name to this mode, it is possible to a certain extent to describe its characteristics.

Perhaps the most significant and characteristic feature is the carefully balanced alternation of the two "levels," and the shift from one "working group" to another within the level. At the beginning of the chant we find a carefully worked out treatment of the F and G elements. Ia uses as a unit the species of fifths[8]

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[4] The Liber Usualis, edited by the Benedictines of Solesmes, 1938, p. 680.

[5] The editors of The Liber Usualis ascribe it to Mode 7 (Mixolydian), which would call for G as final. (Ibid., p. 680)

[6] The section numbers are added here for convenience, and correspond to the musical punctuation marks used in the Solesmes edition of the Chant. The roman numerals correspond to the major divisions (full bar line), the letters to the minor divisions (half bar lines), the letter-primes to the small divisions (bar cutting only the top line of the staff). Ibid., p. xiii.

[7] Johannes Tinctoris, Tractatus de Musica, edited by E. de Coussemaker, 1875, Ch.11: "Sciendum est igitur primum quod isti octo toni ex speciebus diapenthe et diatessaron formantur."

[8] Ibid. The term is borrowed from Tinctoris.

F-C, but emphasizes the tone G. The transition to the second unit, G-C, is accomplished very smoothly by this, and by the fact that this second unit is a species of fourths, G-C, so that both units keep the same upper tone of the range. Once the pattern is established, a species of fifths, G-D, is introduced (IIa), by the tones F-A-C from the first unit. The rest of this "low level" section makes use of these same elements in the same characteristic way. Within the first high level (III) there are two working units, D-G giving the section its general flavor, and B-E, becoming important as the section ends on B. Returning to the low level again (IV), the units are treated in the same way as they were in the first section, but the shift from F to G is condensed. In the final section (V), using the high level, the unit shifts from C-F to B-E, the B as a new element being carefully brought in first as a sort of lower supplement to the C, and finally attaining importance of its own.

In this chant, the mode is obviously more than a mixture of octave-species modes, such as might be found in a chant beginning in the Dorian, and later extending the range to include the hypo-Dorian too; here there is a much closer integration of small units. And although it is possible to give names to the elements themselves, or to analyze their make-up, the whole mode is considerably more than a sum of its parts. In the music itself, the characteristic features---the consistent and unique use of the units of fourths and fifths, the alternation of levels, and the subtle relationships between the units---fuse into something characteristic of the whole, a special mode which is a mode in a very real sense, in spite of the fact that we can not label it Dorian, or Lydian, or "X" mode.

A similar method of analysis may be used with the "Haec Dies",[9] again resulting in the observation of a special mode for this chant (Ex. 32). Its range extends approximately from F to F an octave above, and its final is A; the Solesmes monks have assigned it to the hypo-Dorian mode,[10] although neither the range nor the final seems to indicate such a choice.

The first phrase (Ia) uses the unit F-C, circling around, and ending on A. Ib uses the unit A-E, the emphasis being shifted a third higher, while the common denominator is provided by the A in each phrase. The A-E unit remains through the rest of the phrase (Ib´), circling around C, and ending on it. Within the next section (II) there is a shift from A-E to F-C and the phrase ends on F. The rest of the chant up to the first double bar line (III) repeats the modal process followed in the beginning of the chant, the unit F-C shifting a third higher to A-E, circling around C, this time ending on A.

The second part of the chant begins with the C-F working unit, with emphasis on D (IV). The next phrase starts with the unit A-E (Va), and then covers the octave G-G, as a combination of the units G-D, and D-G; Va´ again returns to the A-E unit. VIa uses the B-E unit, with emphasis on C, and returns to the F-C level (VIa´). The final section again uses the shift from the F-C to the A-E unit (VII), and the whole chant cadences on A.

From this analysis of the working units---again the species of fourths and fifths---this special mode may be briefly described as being based on a combination of the fifth species F-C, and A-E, with shifting emphasis on the tones A,C, and D, and D-G, covering the octave.

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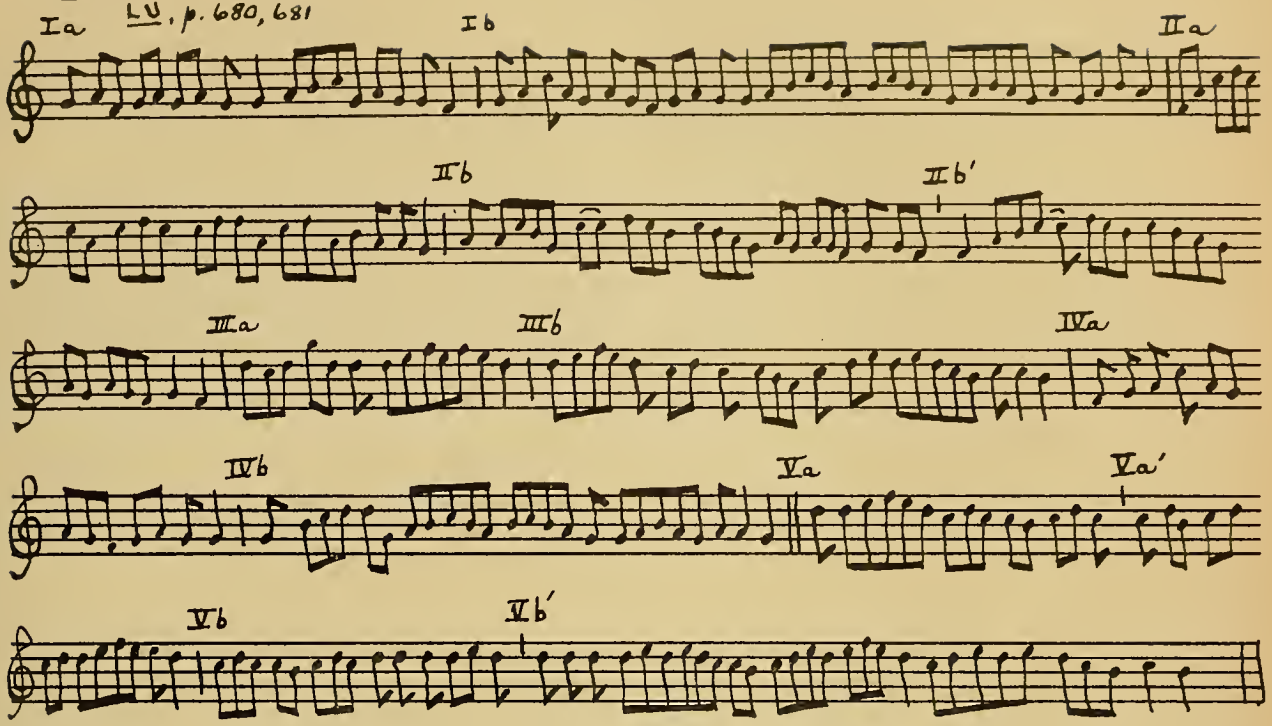
[9] Liber Usualis, pp. 778-779.
[10] Ibid.

Ex. 31

Tenebrae Factae Sunt

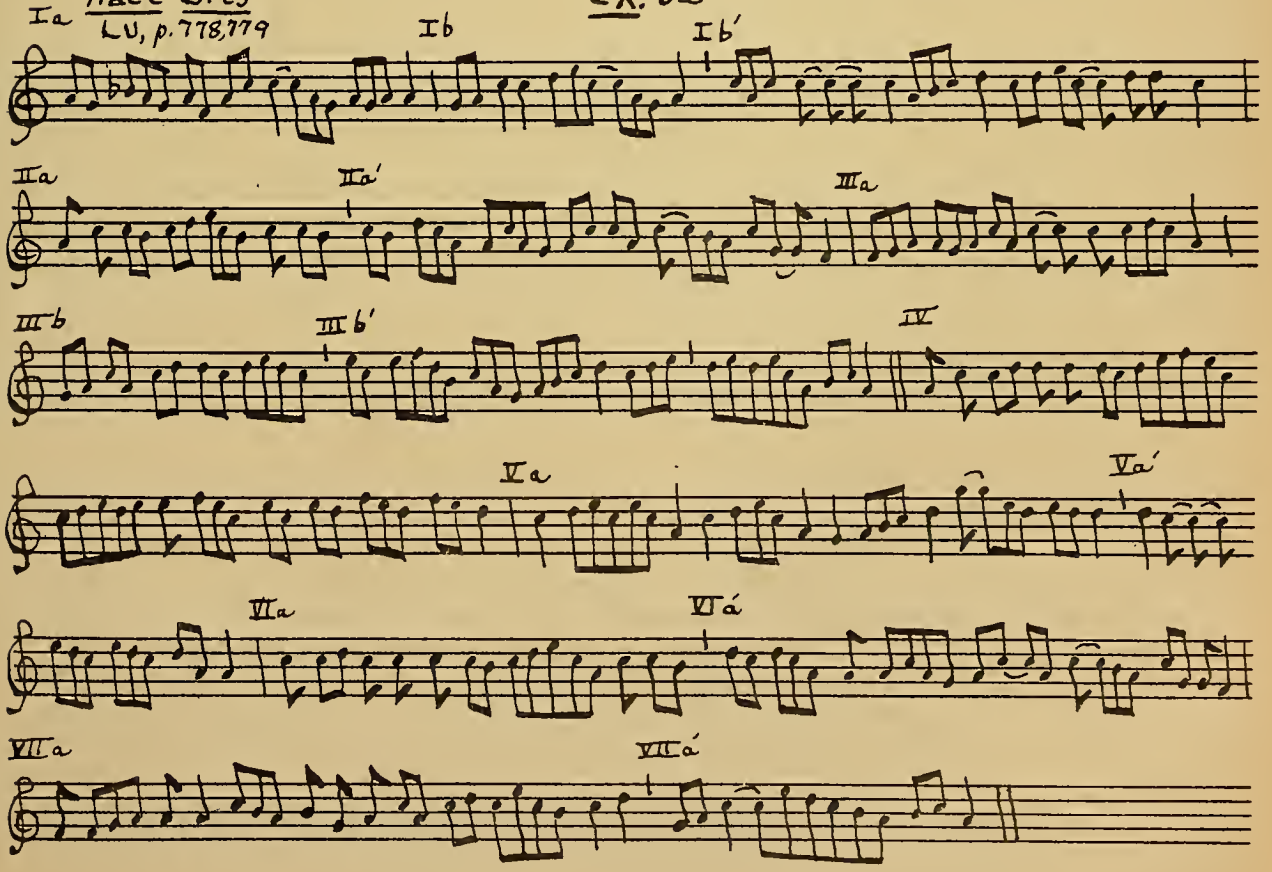
LU, p. 680, 681



Ex. 32

Haec Dies

LU, p. 778, 779



The Mode in Polyphonic Music

Since the mediaeval theorists in general conceived of mode only as specific, describing all melodic lines as if they fit into a preconceived theoretical pattern, and looking upon non-typical features as exceptions to, instead of as a very valid and important part of the mode, it is not surprising that they were completely unable to cope with the problem of mode in polyphonic music. They recognized, of course, that when four parts were sung simultaneously, all these parts were not necessarily in the same specific mode, but the question of the mode of the whole, considered as an entity, was one over which they skipped as hastily as possible. When this question of the "Universaliter", or the general mode of a piece of polyphonic music is put to Tinctoris, he says that it must be answered according to the mode of the tenor, or cantus firmus, and if the question is put in particular, one has to answer it for each part separately.[11]

Glareanus, almost a centruy later, analyzed polyphonic music only with misgivings.[12] He, too, is forced to assume that the cantus firmus determines the mode of the piece, but he finds justification for irregularities and freedom in handling modes not completely covered in his logical system, in the genius of the composer.[13]

I assume that both Tinctoris and Glareanus must have realized that the problem of the mode of a piece of polyphonic music was necessarily something more than the mere academic assertion that the cantus firmus "determined" the mode---or even that each part, considered separately had a mode, but that the piece as a whole had no such characteristic. There were probably many good reasons why the theorists dodged this question: for one, any "revolutionary" ideas were considered extremely dangerous. In the case of Glareanus, he may have felt that he had his hands more than full in presenting his case for the acceptance of twelve modes. Judging from

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[11] Johannes Tinctoris, Tractatus de musica. Liber de natura et proprietate tonorum, cap. XXIV, in Coussemaker, Scriptorum de Musica, Paris, 1864: "Denique notandum est quod commixtio et mixtio tonorum non solum fiunt in simplici cantu, verum etiam in composito, tali que modo ut si cantus sit cum duabus, tribus, quatuor aut pluribus partibus compositus, una pars erit unius toni altera alterius; una autentici, altera plagalis; una mixti altera commixti; unde quando missa aliqua vel cantilena vel quaevis alia compositio fuerit ex diversis partibus diversorum tonorum effecta, si quis peteret absolute cujus toni talis compositio esset, interrogatus, debet absolute respondere secundum qualitatem tenoris eo quod omnis compositionis sit pars principalis et fundamentum totius relationis, et si particulariter de qualibet parte hujusmodi compositionis cujus toni sit petatur, particulariter talis aut talis respondebit. Verbi gratia si quis universaliter mihi diceret: Tinctoris, peto abs te cujus toni sit carmen "Le Serviteur", responderem universaliter primi toni irregularis, quoniam tenor pars principalis ipsius carminis sit hujusmodi toni; si tamen particulariter peteret cujus toni esset Supremum aut Contratenor, particulariter responderem et illud et istum esse secundi toni etiam irregularis; ad particularem vero tenoris interrogationem respondendum esse sicut ad universalem, nullus est qui dubitat; et simili modo de caeteris accidentibus toni interrogatum respondere opportebit.

[12] Glareanus, Henricus Loritus, Dodecachordon, Basileae 1547, Liber II, Cap. 39: "Itacque absoluto nunc hoc libro de cantu, ut vulgo appellant, plano, aggrediar bonis avibus ad huius aetatis inventum, nempeat ad cantum mensuralem, ut vocant, sed religiose ad modum. Nam quid faceres in re nova, ubi authorum ductu destitutus solum usum spectare cogaris." For my discussion of the Dodecachordon I am indebted to Miss Edith S. Woodruff, of Vassar College, for letting me consult annotations made by her to the German version.

[13] Ibid., Liber III, Cap. 26.

the care with which he goes about this seemingly simple task, the job of discussing the "over-all", or multiple part modes---to which he could not even attach the safety device of names---would have been unthinkable.

Essentially, I think, it is the problem of names that stands in anyone's way when it comes to discussing the over-all mode. For even if each voice is written in a clearly definable specific mode, the whole naturally makes an impression beyond, and distinct from the sum of its parts. The mode that arises may happen to have the flavor of a specific mode, but very frequently it is of a special character, existing for one piece only, and in terms of semantics, a name or classification can arise only when we can see marked identity between objects or qualities, and we give the name or classification to this similarity.[14] But in discussing the character of something alive, as music is, unique qualities often outweigh "similar" ones, and it is with this uniqueness that we have to occupy ourselves if we are to reach an understanding of the problem of mode. It is as if, in trying to understand a person, we would be content with the word "introvert", instead of trying to know the special nature of the individual case.

In some cases this does not need to be analyzed. A person familiar with the general color and sound of the melodic patterns in a single-line Dorian melody, may say at once, upon hearing a polyphonic composition, "That sounds Dorian", meaning that the general impression which he receives is very similar to that made upon him when he hears a specific Dorian plainchant melody. Since we can not turn to any pseudo-harmonic scheme of an anachronistic "modal harmony" to explain this reaction, we must assume that the effect arises from the nature of the individual melodic lines and the way in which they are combined, and not from any kind of "chord progression" or autonomous harmonic flavor, such as would be the case in determining whether a tonal composition was written in the major or minor mode.

But of course this impression of Dorian derived from a piece of music can be accounted for by modal analysis. Heinrich Isaak's "Kyrie Eleison" from the Mass Frölich wesen,[15] for example, gives such an immediate "Dorian" impression, and the reasons seem fairly obvious. Each of the individual voice parts is either Dorian or hypo-Dorian. The prevailing rules for consonance and dissonance in this period provide that either a perfect or imperfect consonance must appear at points of emphasis and the Dorian melodic patterns in each individual voice are therefore usually forced by these rules to appear together at the points of emphasis---giving to the whole its Dorian mode flavor. But it is not, as it might seem at first, merely a question of quantity---that is, each part being Dorian, the whole must be Dorian---for with more freedom, or different standards for the use of consonance and dissonance, the characteristic tones might not be combined in such a manner, so that an entirely different over-all modal flavor might result.

Okeghem's Missa "Caput"

The over-all mode resulting from voice parts in different modes is achieved in the same way, the rules for consonance and dissonance forcing certain combinations of the important tones of each mode. The "new dimension" mode appearing through these combinations may show characteristics of each of the one-part modal strands; if one of these predominates strongly enough, the over-all mode may simply take on

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[14]Cf S.I. Hayakawa, Language in Action, 1941. Ch. 10.

[15]Arnold Schering, Geschichte der Musik in Beispielen, 1931, p.50.

the flavor of that strand. But frequently modal elements which seemed unimportant in any of the strands considered separately may stand out in the over-all mode. A fragment from the Agnus Dei of Okeghem's Missa "Caput"[16] illustrates this point. In this section, (Ex. 33) Dorian and Mixolydian voices combine to produce an over-all mode which emphasizes B natural. This is especially striking when the B is combined with F, producing the tritone. But it is not so much the harmonic consideration of this interval, for any triad combination can appear in any mode, as it is the melodic formulae which utilize B in two of the upper voices, and especially in this section of the cantus firmus. In any one of the voices, taken separately, this B somewhat disappears into the Mixolydian formula, but when the voices are taken in combination, and the B is placed against the B flat and F of the Dorian, it springs into life in the new dimension as something of prime importance and modal significance. This phenomenon opens up many interesting possibilities of modal orientation in the new dimension, and is an important factor to be considered in understanding the nature of the special over-all mode in fifteenth century music.

For this purpose I believe that no music could be better than the Missa Caput, for it not only reveals many interesting theoretical and technical aspects, but also shows especially well what extremely beautiful and unusual music can arise from a special mode flavor. In spite of Okeghem's reputation as a dry and mathematical composer, interested only in various outlandish stunts such as writing a 36-voice canon, the most immediately apparent factor in this mass is one of color and "modal flavor" rather than construction, and the progression of unusual and unexpected tone combinations creates a very outstanding impression.

The mass is based on a cantus firmus, which appears in the lowest part, designated as tenor. This previously given melodic line naturally determines the scheme of tone combinations to a great extent, because of its guiding position in the bass, and the necessity for consonance at points of structural emphasis. Superficially, it seems to be in the Mixolydian mode; the final is G, and the range extends from G to an octave above G. (Ex.35)

However, in the Kyrie there are intermediate cadence points, the most important appearing at the end of the first "Kyrie Eleison", after which the cantus firmus is dropped for awhile. If this first section is considered as an entity---and to a certain extent it is treated as such---it appears to be in the hypo-Dorian mode, with a D final, and a range extending from a fourth below to a fourth above the final.

Similarly at the end of the "Christe Eleison" there is a cadence on A, although this has more of an intermediate character, since there is no break in the cantus firmus here between sections. Finally, Okeghem has chosen to impose a final D upon the cantus firmus, although the original melodic line ended with the G. If the Kyrie as a whole were to be considered from this superficial viewpoint of mode, it would appear to be hypo-Dorian, based on an originally Mixolydian cantus firmus.

But a mode, according to the definition set up in the beginning of this discussion, must assume a certain flavor, based on the whole and half step relationships in the range of available tones, and the arrangement of material in this cantus firmus shows how strong the modal flavor is, in the underlying construction of the melodic line, for its effect throughout is that of a major-like mode, whether the final D is considered or not. This naturally leads to the question of why Okeghem added this final, pointing to the Dorian minor-like mode, while basing his music on a mode obviously Mixolydian in character.

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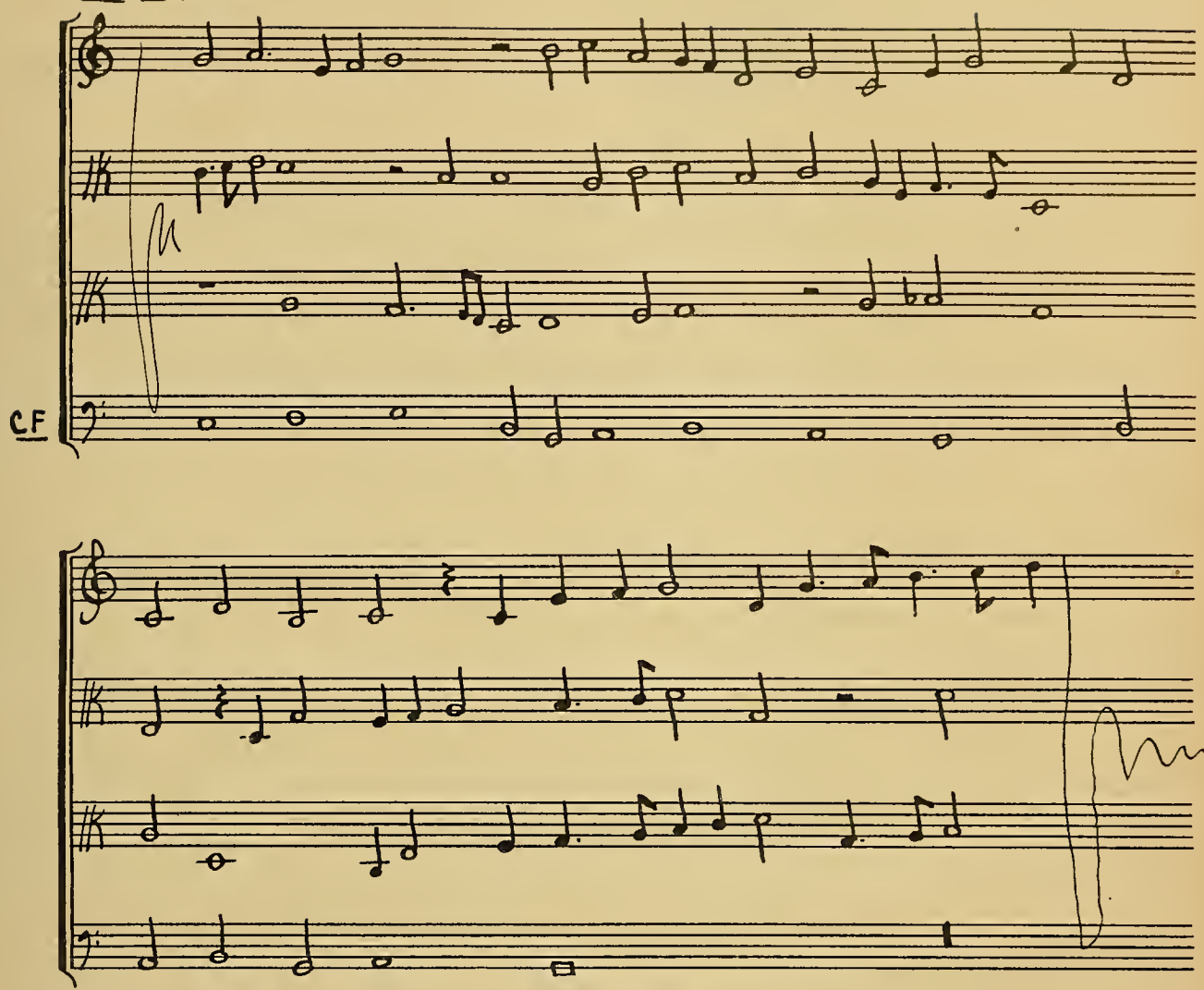
[16]Johannes de Okeghem, Missa Caput, Denkmäler der Tonkunst in Oestereich, XIX, Vol. 38, Vienna, "Agnus Dei", measures 105-110.

Ex. 33

OK, AGNUS

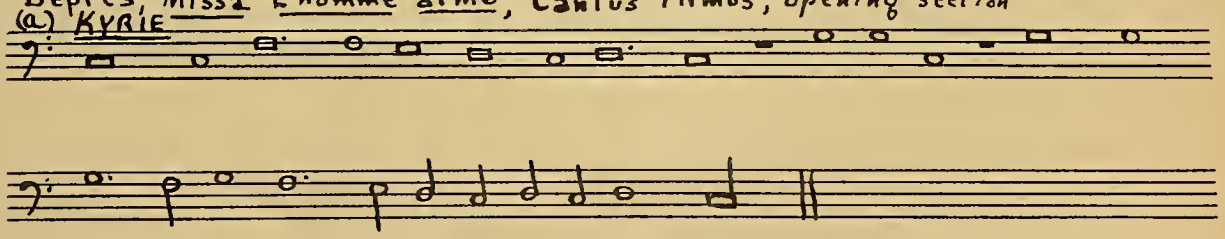
CF



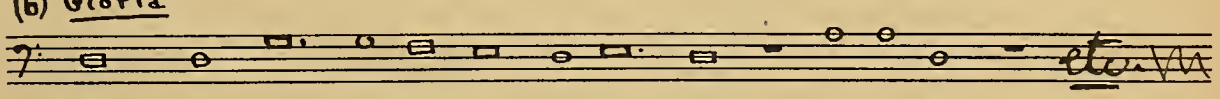
Ex. 34

Deprès, Missa "L'homme armé", Cantus firmus, opening section

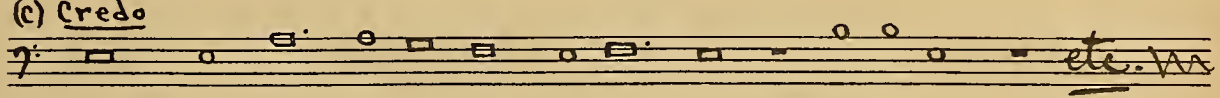
(a) KYRIE



(b) Gloria



(c) Credo



Another point to be considered in dealing with the cantus firmus is the frequent recurrence of B natural, for the fifth above this tone F natural, forming the tritone, unless musica ficta is added. Dufay, in using this same cantus firmus,[17] placed it in an inner voice, thus avoiding the difficulty (dissonances against the lowest part being under more rigid control than among the upper voices), but Okeghem has used it as the bass, where it must guide the progressions of tone-combinations.

From this one line alone, then, there is evidence of a mode which contains Mixolydian, Dorian, and potential tritone elements. Considering all the voices together, the Dorian elements seem to provide the framework for the music. The first tone combination is D-A-D (Ex. 35), pointing up this Dorian effect, and the essentially Mixolydian cantus firmus is brought in on the second combination only after the Dorian D has appeared. The first section of the Kyrie also ends with this color, and Okeghem here has utilized the A-D melodic progression in the cantus firmus for a Dorian cadence with the raised leading tone, giving it further emphasis by abandoning the cantus firmus for awhile after the cadence. The final cadence at the end of the Kyrie is of the same type, but here the D is added to the cantus, and therefore is not an integral part of the original melody.

But the Mixolydian elements of the cantus firmus can not all be forced into this Dorian pattern. The original D-A-D combination passes to Mixolydian when the cantus enters; in the tenor secundus the D passes to E, to F sharp, and G, emphasizing the Mixolydian by the raised leading tone, and entering the combination G-B-D. (1)[18]. This F sharp is abandoned in the next combination (2), and the D in the cantus firmus is supported by F and A.

At (3) there is another Mixolydian cadence, with the raised leading tone. But as the first section of the Kyrie progresses, the F sharp with its Mixolydian implication no longer appears. The next musica ficta to be used is the B flat (4) in Dorian context, and the Dorian F natural remains even when the cantus asserts the B natural, and at each of these places (5,6,7) forms a tritone.[19]

[17] Denkmaler der Tonkunst in Oestereich, XIX, Vol. 38.

[18] The figures in parentheses refer to the musical example.

[19] Some musica ficta--those accidentals which appear beside the note affected--appeared in the original manuscript. The accidentals which appear above the note affected are added by the editors of the Denkmaler, raising the leading tone in a cadence, a convention which was widespread at Okeghem's time. The editors have not added musica ficta to avoid the tritone, apparently because in many such cases this addition would produce either another tritone, or a cross relation. The practice of Musica Reservata--secret modulation--was as far as we know not adopted until a later period, which forces us to assume that Okeghem used the tritone consciously for its effect. Cf. Edward Lowinsky, "The Goddess Fortuna in Music", The Musical Quarterly, Vo. XXIX, No.1, January, 1943, 45-77.
Editor's Note: In this connection it is interesting to notice that Johannes Tinctoris touches upon the use of the tritone in music of his period (Liber de arte contrapuncti, lib. II, cap. xxxiii, in Coussemaker, Scriptorum . . ., vol. IV). He quotes three examples from compositions by Faugues, Bunnois and Caron.i The Busnois example, taken from "Je ne demande", (no. 42 in Petrucci, Harmonice Musices Odhecaton A, 1501) shows that these are isolated cases in which the tritone is by no means a chief constituent element of the order of Okeghem's tritones in the Missa "Caput". Slightly embarrassed by his discovery, Tinctoris dismisses the case saying: "Et profecto quomodo errores tam evidentes a tantis compositoribus committi video, nullo prorsus alio modo eos excusandos arbitror quam per hoc dictum Horatii: quandoque dormitat bonus Homerus." For the examples under consideration this may indeed be good enough an explanation. It would certainly not suffice to cover Okeghem's consistent practice in the Missa "Caput". We can only regret that so keen and intelligent an observer as Tinctoris did not comment on this rather than on a few minor infractions of a rule. E.K.

In analyzing such a section, it is possible to separate these Dorian and Mixolydian elements in this way; even where the F natural appears against the B natural we may analyze the cantus firmus as Mixolydian, and, separately, the other voices as being in the Dorian mode. But in actual experience, these elements, far from being separated, appear to be fused together.

The mode of the Kyrie, in the broader sense, deals not so much with the fact that we can analyze the cantus firmus as Mixolydian, or another voice as Dorian, but---as in the case of the "special mode" plain-chant---in the way in which these elements are used. The mode, or flavor of this music is unique, but no less effective or consistent for not being catalogued. Its nature arises from the more conventional specific modal aspects which have been pointed out. Throughout the mass, the hypo-Dorian mode remains as a background, a color with which the entire piece is washed. The opening portions of the Credo, Gloria, Sanctus, and Agnus Dei, which are without the cantus firmus, show this color unadulterated by other ingredients. An occasional "Aeolian" or "Ionian" cadence[20] does not detract from, or add essentially to the color; they appear only as intermediate nearby resting points. The entrance of the Mixolydian cantus firmus adds a new layer of color, a new mode on top of the original, and the integration of the two modes gives a color somewhere between the two, and yet distinctive in itself, as if blue and yellow were mixed to produce an off-shade of green, for which we have no definite name. This new mode stresses the B natural, which appears midway between G and D in the diatonic series, and gives somewhat the effect of the Locrian mode, which is flavored by the tritone interval occuring between the B and F. But the mode of the Missa Caput has much more subtle implications, the B natural of the Mixolydian and the F natural of the Dorian taking on a twofold and shifting aspect. Thus Okeghem stresses the B natural which is an essential part of the cantus firmus, by making it the high point of essentially Dorian melodic lines. There is no sense here of modal modulation, of moving from one point of orientation to another, but rather of mixing the modal elements in various proportions. If the music moves to a Mixolydian cadence there is no sense of change from one element to another---the impression is one of revealing elements already present, and for a moment, the Mixolydian elements shine through.

This effect is clarified through the complex and subtle modal plan of the mass as a whole. The opening section, the Kyrie, presents the cantus firmus almost immediately, after the first Dorian combination. The two elements which are to be combined are thus presented for a moment as separate, but congenial flavors. The first phrases preserve these identities to a certain extent, but the early introduction of the tritone forecasts the new, compound special mode, which in the succeeding phrases of the Kyrie becomes established. Once established, expressive shadings become possible without disturbing the essential homogeneity, and an unusually expressive effect is produced by beginning the succeeding sections with the hypo-Dorian flavor alone, and later imposing the Mixolydian of the cantus firmus. This I should call the mode, the manner of the music, and the essence of it lies in those sections in which the cantus firmus enters upon the extended hypo-Dorian phrases, adding a new and opposed element, immediately absorbed and absorbing, without the effect of contrast or disturbance.

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[20] Although these modes were not recognized by the theorists at this time, and so are anachronisms, they were in use long before the theorists accepted them.

Josquin de Près' Missa "L'homme armé"

Okeghem was not the only composer of that period to make use of the expressive possibilities of this kind of special over-all mode, for Josquin de Près has done much the same thing in his Missa "L'homme armé".[21] This is a particularly striking example, for in each section of the mass, the cantus firmus begins on a different tone. It is not transposed to preserve the mode, but varies each time it occurs, so that each part of the mass is based on a cantus firmus which, although following the same melodic contours, begins on a different pitch, and has a different arrangement of whole and half steps. This naturally places it in a different mode each time. (Ex. 34)

The Kyrie begins without the cantus firmus, with a D in the bass and D in the altus, progressing to F. The first cadence point (the first combination in the fourth measure) is D-D-A, and this is approached by the use of C sharp in the altus. This Dorian "D" flavor remains almost until the entrance of the cantus firmus, where A is emphasized, and used as a cadence point, G sharp leading to it in the top voice. At this point, the entrance of the cantus firmus (which here begins on C, and has as a working unit the species of fifths C-G) pulls the D-A group of the other voices toward A, and imposes the flavor of this unit on the music as a whole. The last combination of the first Kyrie Eleison is A-C-A-E, with the C in the cantus firmus. The cantus firmus is dropped before the end of the whole Kyrie, and the other voices revert to the D-A unit for emphasis, both in the single lines, and in combination. The final cadence is on D in all three remaining voices; this is approached by C sharp in the Superius.

The Gloria, with the cantus firmus moved up one tone so that it begins on D, starts on D in the bass, imitating briefly the pattern of the cantus. D-G, and D-A elements are used in much the same fashion and mode as in the Kyrie; however, when the cantus enters here, it too makes use of these elements, the C-G unit having become D-A. In this section there is proportionally frequent use of B flat, and of C sharp at cadence points. The final cadence point is again D, without the cantus firmus.

The Credo begins with emphasis on E, but leads to a C sharp- D cadence point before the tenor enters with the cantus firmus, this time moved up to E, on an A-C-E combination. Cadences marking smaller sections within the Credo are on D or A; the final cadence is again on D. The rest of the Mass follows this general plan.

The final D points to a general Dorian framework, which is evident in the music whenever the D or F natural appears in the cantus---and this is, of course, at different points each time the cantus is repeated--and whenever these tones occur the other voices, as it were, make the most of it to emphasize the Dorian flavor, and frequently as cadence points. When the cantus firmus is free of these tones, the Dorian flavor is not felt so strongly, and the particular cantus firmus "species of fifths", which depends on the starting tone, flavors the background with its special mode. The over-all mode is a shifting one, combining the frame-work Dorian flavor with that of the mode of the cantus in each individual section.

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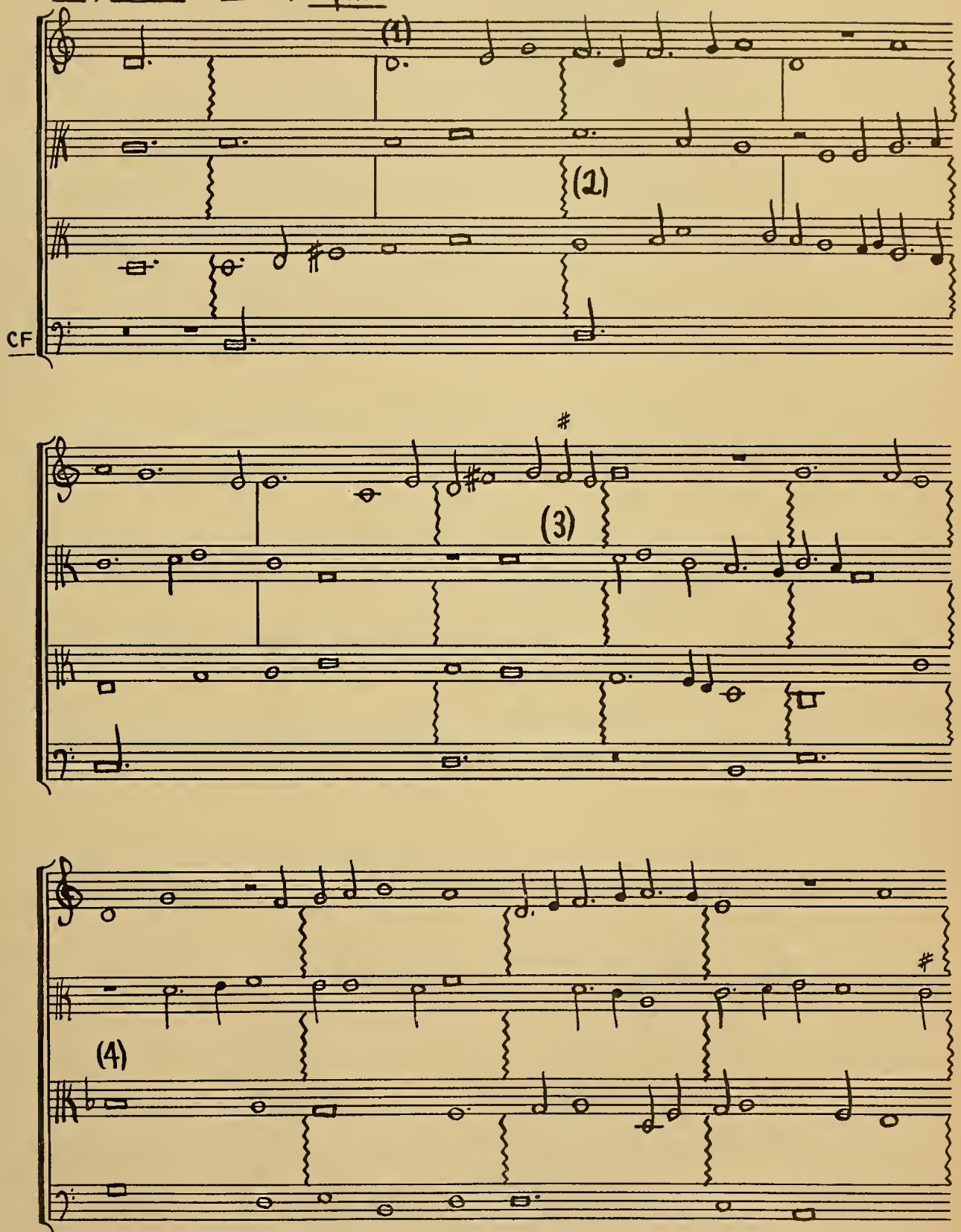
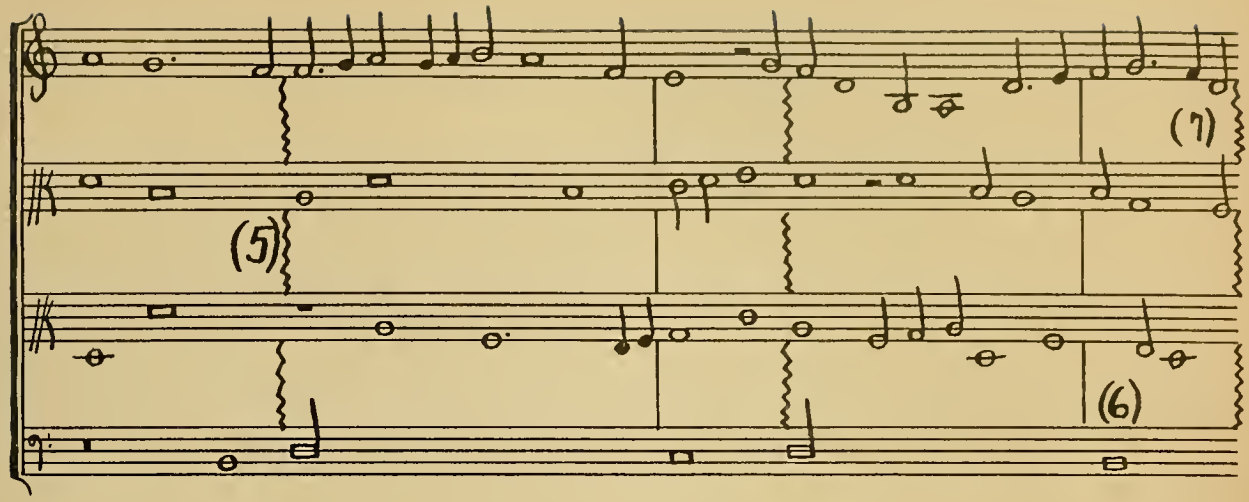
[21] Josquin Des Près, Missen, Vereeniging Voor Nederlandsche Musiekgeschiedenis, Amsterdam, 1926, 1, Missa L'homme Armé.

Ex. 35

OK, MISSA "CAPUT", KYRIE




(5)
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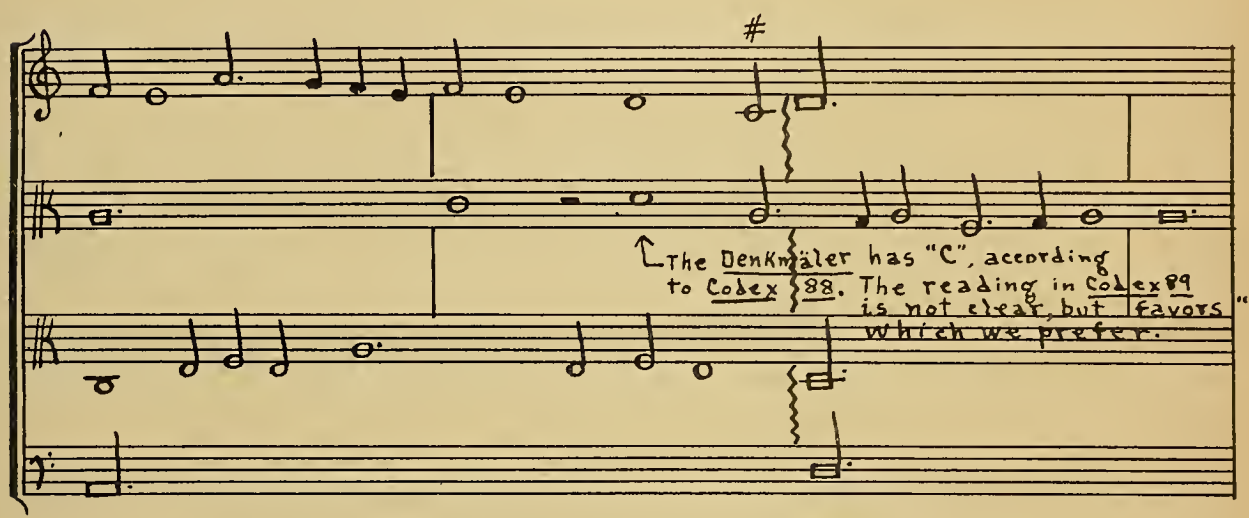
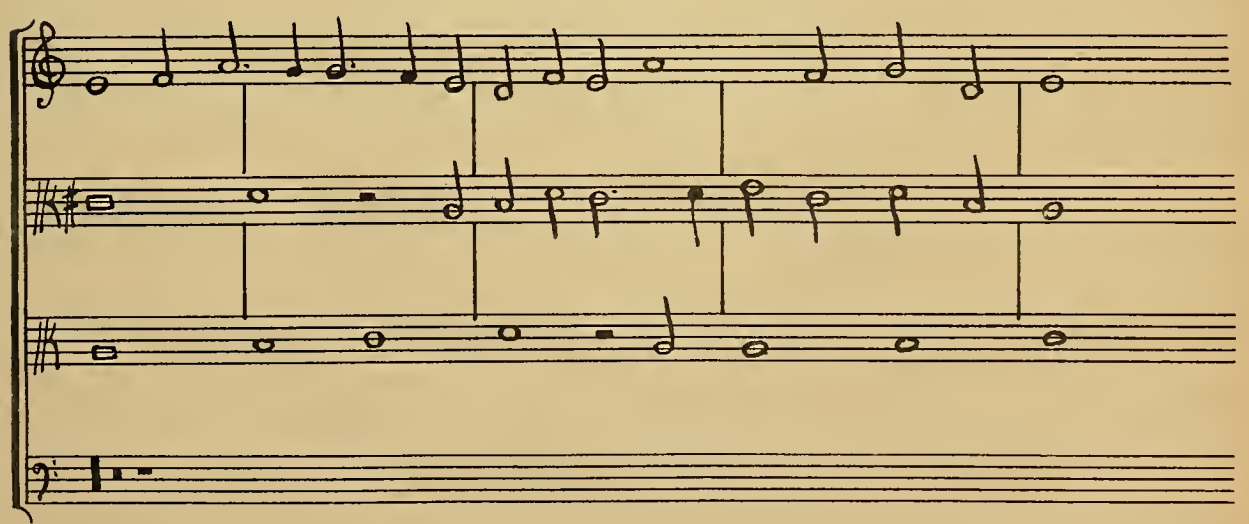
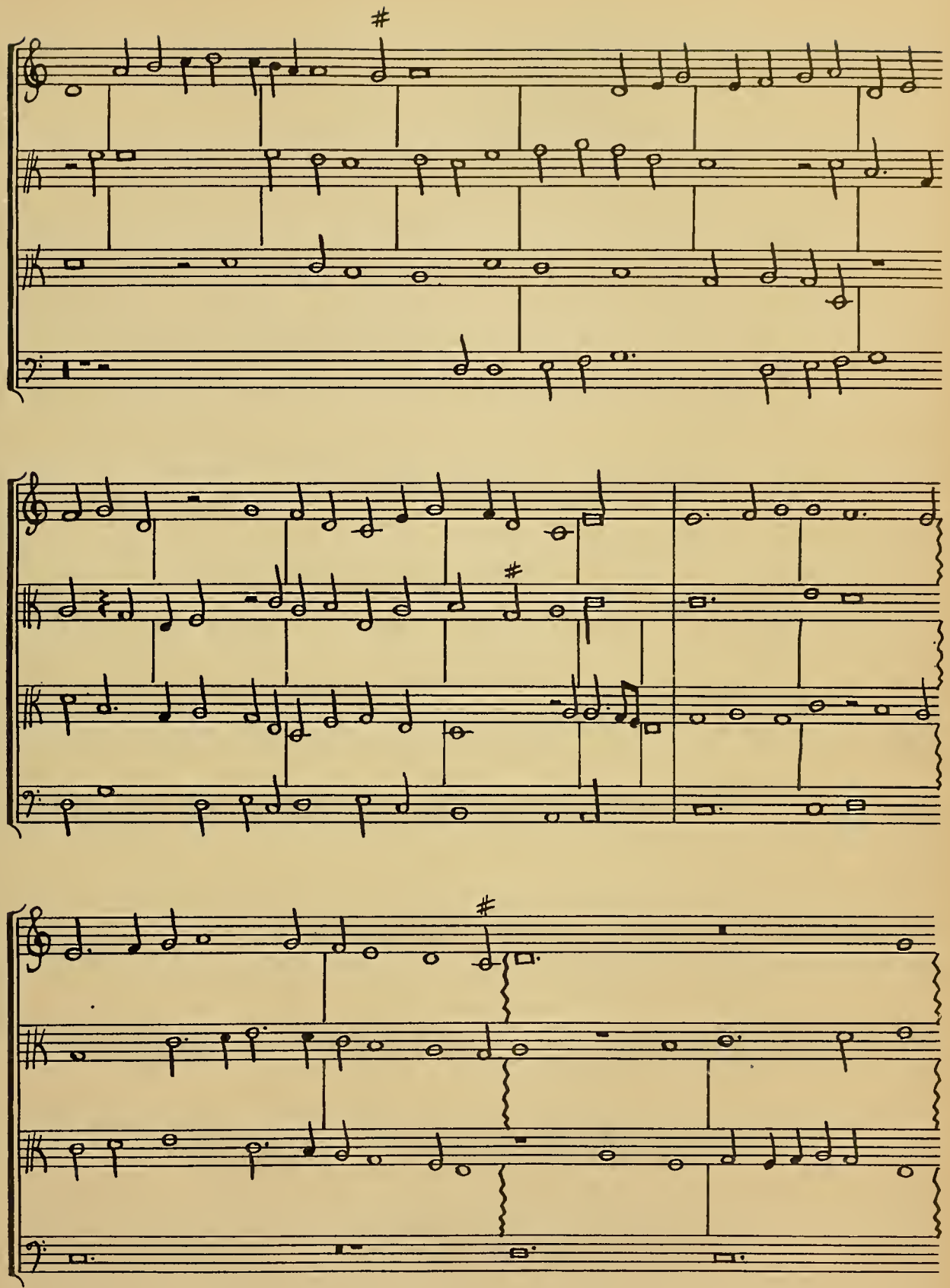
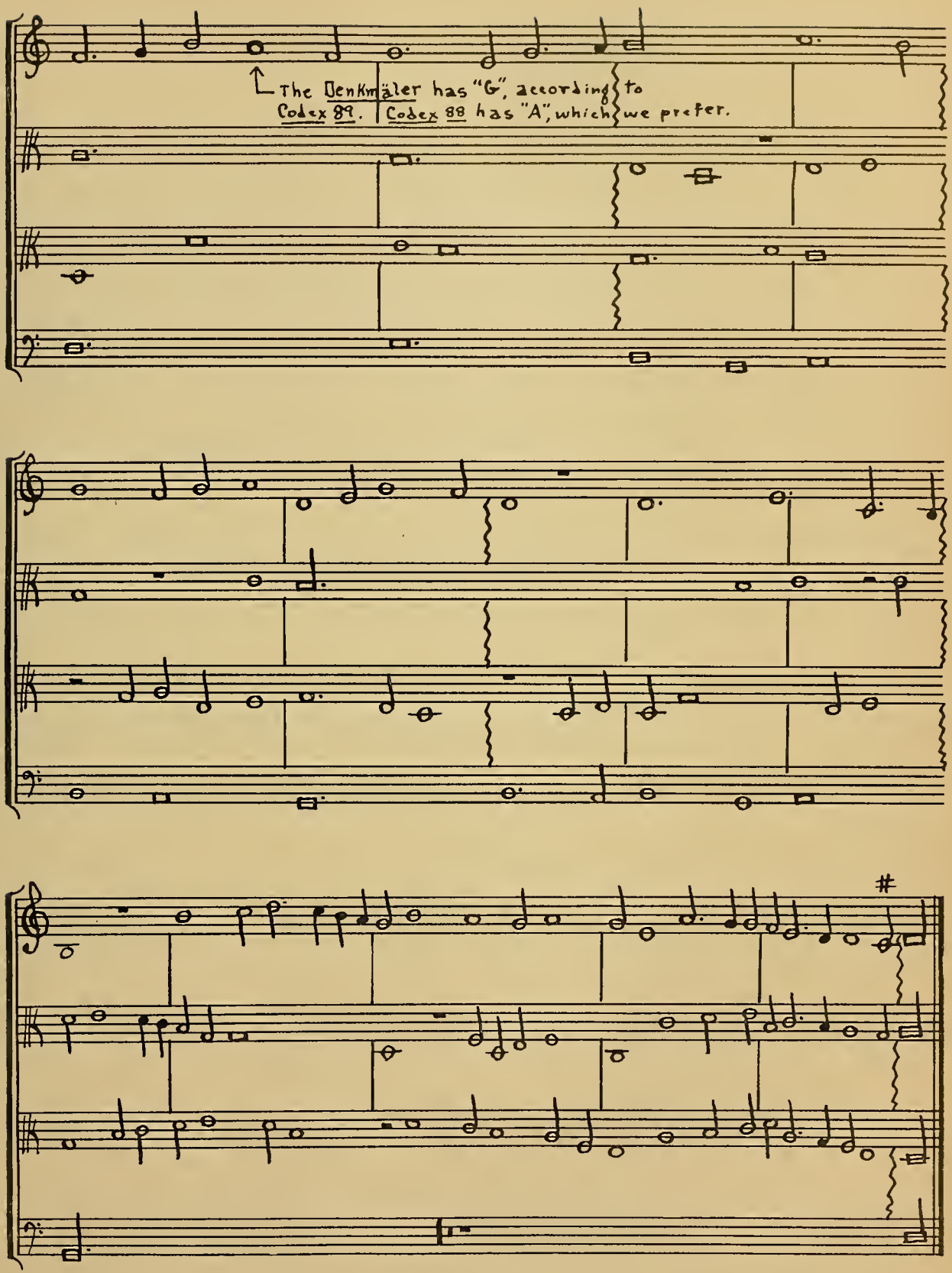

The DenkmÄler has "C", according to Codex 88. The reading in Codex 89 is not clear, but favors "D", which we prefer.






The Denkmäler has "G", according to Codex 89. Codex 88 has "A", which we prefer.

The Problem of the "Special" Mode in the Theoretical Writings of Glareanus and Tinctoris

In brief summary, these are the main points to be considered in this approach to the problem of mode in mediaeval music. First, that in one-line music, the mode need not be specific in order to be effective, but may also be of a special character. Second, that in polyphonic music an over-all mode, not to be confused with a harmonic scheme, or a system of modulation, exists, which arises from the way, the manner in which the modes of the individual voices are combined. This general mode is similar to that of one-line music, only a different dimension has been added. Finally, that this over-all mode, in its special nature, is exploited for very expressive effects, and at the same time provides a most important unifying factor in the music of the fifteenth century.

Although mediaeval theory was concerned with the problem of the specific mode only, we must assume that this theory was in some ways related to musical practice of its own time. And in order to fully understand the concept of the special and over-all mode in this music, it is necessary also to consider the viewpoint of the leading theorists in regard to mode as they understand it. For this purpose I have chosen the treatises of Tinctoris and Glareanus. Johannes de Tinctoris, born in 1446 in Belgium, studied law and theology, and was admitted to the priesthood. He founded a public school at Naples, and it was there that he wrote most of his theoretical treatises. His viewpoint is especially interesting, for he was personally acquainted with Okeghem and other composers of his time and with their methods of work, and one may also assume that they paid some attention to his theory.

Heinrich Loris of Glarus (Switzerland), or Glareanus, was born in 1488. He studied at the University of Cologne, and in 1529 was appointed professor of Poetry at Freiburg; it was here that he completed his famous Dodecachordon. Glareanus stood at the end of the modal period, and was in a position to oversee the whole era, making his works of extreme importance in reference to the present problem.

It is precisely these points of the special and over-all mode that Glareanus fails to bring out in his treatises on modal theory, or in his analysis of the music of his contemporaries, and of the earlier monophonic period; consequently he is frequently forced into unconvincing argument, or lack of argument in discussing the musical examples in the Dodecachordon. His taste in choosing these examples is consistently excellent, and he is able to impart much of his enthusiasm for the beautiful music to the reader, but one can not help feeling a discrepancy between his inner sense of values and his inadequate understanding of the principles involved. In discussing a canon such as that from the Mass "Hercules", by Josquin des Près,[22] he has no curiosity as to the over-all mode, being content to call it hypo-Dorian. He does not take into account at all the upper voice, imitating the "hypo-Dorian" bass at the fifth, although the A-E unit presented there is perhaps the most immediately apparent modal factor, and the hypo-Dorian flavor as such is felt only as the voices approach the final cadence on D.

Glareanus' general approach to the modes is through the range, that is the octave species. He finds that the most logical order in which to discuss them, therefore, is to take the two modes having the same octave species together, instead of holding to the authentic-plagal grouping, which would emphasize the common final. Thus he discusses the hypo-Dorian and Aeolian together,[23] both of these

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[22]Glareanus, op.cit., Liber III, Cap. 13.
[23]Ibid., Liber II, Cap. 5.

modes being in the A-a octave species, instead of considering Dorian with hypo-Dorian. Throughout the books of the Dodecachordon surprisingly little point is made of the final, actually.

But starting from this pre-supposed octave, divisions are possible, and Glareanus recognizes two: the harmonic division, or that of a fifth plus a fourth, and the arithmetic, a fourth plus a fifth.[24] (In the plain-chant analyzed earlier in this paper, the fourths and fifths were found to be the main working units, and in general this was true for most of the Chant). This division is used to a certain extent in determining whether a mode with a certain range is authentic or plagal, for if the melodic contours emphasize the lower fourth, it puts the mode in the latter category---it is a "hypo" mode. While Glareanus is trying laboriously to establish the four "reconstructed" modes, which he does with extreme caution and many quotations from the ancients, he goes through the lengthy process of putting together all possible species of fourths and fifths, resulting in twenty-four combinations, twelve of which must be discarded as being non-diatonic.[25] All of this seems to be a somewhat tedious business, but it does show us at least that he did not disregard the smaller units entirely.

He also recognizes other modal characteristics, speaking frequently of the phrasis or melodic formulae of a piece of music pointing toward a certain mode, and he mentions the tone of secondary emphasis, and the characteristic skip or interval of each mode. He does not go into great detail on these matters, and is not even particularly interested in them, I think, for while he dispels the idea of uniformity in the use of a mode, he says that it is superfluous to try to explain the various mode endings, as different nations use different ones,[26] and he lists only the most usual. In general he is content with telling the reader that a certain melodic line has for instance a Lydian phrasis, without elaborating. In the theory of Glareanus, the scalar concept of the mode has certainly swallowed up a great deal of the earlier approach.

Gustave Reese sees in the final adoption of this scalar concept a progress over the earlier idea according to which the mode was merely a category of all melodies with certain motivic characteristics in common. He points out that with the scalar system it was possible to invent new formulae, and make the system less rigid, and yet stay within the mode, for in this new character the mode was more inclusive.[27] This is undoubtedly true to a certain extent, but I think that by the time of Glareanus the pendulum had swung too far the other way; that instead of broadening the principle of the modes, it went too far in excluding the more living elements of the music.

Glareanus might have gone a long way toward understanding the special nature of mode in one-line music, through his recognition of the elements of fourths and fifths in the octave. But each time, it seems to be the octave itself that stops him and blocks the idea, for the natural smaller units, according to his theory, are forced into this larger span, whether or not the music gives evidence of it. Since only seven of these octave-species are possible in his diatonic vocabulary, he is naturally thinking in terms of these specific classifications rather than opening his mind toward unique arrangements of the elements. He was clearly interested in the logical classification of material, and this I think was the prime

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[24] Ibid., Liber I, Cap. 8.
[25] Ibid., Liber I, Cap. 3.
[26] Ibid., Liber I, Cap. 15.
[27] Reese, op.cit., pp. 163-164.

factor which moved him to extend the modal system to contain twelve modes. His explanation is that he is not inventing anything new, but merely restoring to their former place modes that have for a long time been in obscurity, that since these modes have actually been used so much---the Aeolian as a Dorian with B flat, and the Ionian as a Lydian with B flat[28], they should be admitted to the theory; but these factors were probably of secondary importance in arousing his interest, as he generally does not take the attitude of "fitting the theory to the music" at all. The rounding out of the system, however, the filling in of the missing modes in the A and C octave species must have appealed to him immensely. His twelve modes of course still do not take account of the last possible modes within this system---the B modes---but he is quick to explain this omission, on the grounds that the octave from B to b may not be divided harmonically, because it contains no perfect fifth, and that from F-f may not be divided arithmetically, because it has no perfect fourth.[29] This was probably a disappointment to him, for his system would have been even nicer with fourteen modes, but in view of the official conservatism of the period, this might have been going a little too far. He therefore takes all possible care to prove that these modes are quite impractical, giving as his examples of the B modes extremely unbeautiful melodies.

Tinctoris, because of the prominence that he gives the smaller units of fourths and fifths in his theory, shows much clearer insight into the problem of the special mode in one-line music. It was certainly not expressed in these terms, but he is not so blocked by the octave-species system as was Glareanus, many years later. This is especially evident in his treatment of his so-called "mixed modes", of which he distinguishes the "commixtio" and "mixtio".[30] "Commixtio" occurs when a melody in a certain mode shows characteristics of another mode, either without transcending its original range, or by covering a wider range. Here, the changing-over into a different mode is identified with a new emphasis on fourth-species foreign to the original mode, yet available within its range, and the special musical factor of context is taken into consideration. He says that almost any mode may be "commixed" with any other. "Mixtio" simply means that the range of the plagal is added to that of an authentic mode, or vice versa. Glareanus, typically, is mainly interested in this latter aspect of mixing modes, and this seems quite elegant to him, provided the singer can cover the range satisfactorily. As far as the mixing of modes in polyphonic music is concerned, Glareanus admits the frequency of this practice, but declines to treat the thing as a whole, even in the most provocative pieces of music, such as some of the canons that he discusses. Here he makes a good deal of the fact that if the first part was Dorian, for example, the second imitative part appears in Ionian and yet ends in D in order to agree with the first part, and this method of working back to the Dorian seems more interesting to him than a discussion of an over-all mode.[31]

The only theorist I can find who indicates any notion of the over-all mode was Pietro Aron, an early 16th century theorist who wrote that: "Hence the modern (composers) had better judgment in this as is manifest in their compositions for four, five, six and more voices: each of which has a convenient, easy and grateful place, because they consider all the parts together." [32] Even this turns out to be

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[28] Ibid., Liber II, Cap. 17, 20.
[29] Ibid., Liber II, Cap. 18, 25.
[30] Tinctoris, op.cit., Cap XXII, XIII.
[31] Glareanus, op.cit., Liber III, Cap. 26.
[32] Pietro Aron, Toscanello in Musica, 1523, Libro Secundo, Cap. XVI. "Onde gli moderni in guesto meglio hanno considerato, come è manifesto per le compositioni da essi a quatro, a cinque, a sei, e a più voci fatte: de le quali ciascuna tiene luogo commodo facile e grato: perche considerano in sieme tutte le parti." (For this quotation we are indebted to Dr. Edward Lowinsky. E.K.)

less significant than it seems at first, for the "consideration of the whole" is pointed out mainly as a means toward good voice leading and adequate vocal style. But it may also be interpreted that a consideration of the whole in general was an attribute of modern composers, the good voice leading being just one of the consequences of that attitude.

Glareanus' contributions to music theory really do not add substantially to a more complete understanding of the music of his time, and that of the preceding century as far as mode is concerned, largely because of his unwillingness to accept the idea of an over-all mode, and his inability to think in terms of the special---which he assigns to the genius of the composer, and therefore not in his province---as well as the specific. As far as uncovering principles that may be universally applied to all music are concerned, he failed completely. Even while trying to fit into the theory the four "new" modes---which he observed had been in practical use for some time---he became too bound up in an ancient system of modes to understand their nature; thus when new manifestations occurred, such as the new dimension added to mode in polyphonic music, he had no principle on which to go toward making his theory fit the music. In many ways, he might well be accused of being a "reactionary", although in most cases I feel that this springs primarily from an inability to tie in the music with his theory, rather than from a simple dislike of new manifestations for themselves. But it is his system which points the way toward the coming era of tonal music. The arrangement of authentic and plagal modes, with the emphasis on the octave, and the lower fourth, or upper fifth, these tones being the tonic and dominant in the tonal "keys", foreshadows a time when these elements would take on such great importance that they would establish a new system of orientation.

The Use of Mode in the Past and Present

The "specific" modal aspects became increasingly important as sixteenth century music progressed, Palestrina's music having none of the "special" flavor of the earlier polyphonic composers, and when the tonal system became established, only two modes remained, the major, or Ionian, and the Aeolian, or minor. These may be considered "modes" in the sense that they are still used to give a specific characteristic flavor to the piece of music, from their interval-construction, but they have nothing to do with the "manner" of writing. In the broader sense of the word, the modus, or manner of tonal music is tonality itself, and this manner is the same whether the piece is major or minor. This one "tonal" mode then, specific in the extreme, based as it is on set relationships of emphasis among tones, was the successor of the many mediaeval modes, and replaced them as the factor of orientation in the music of the seventeenth, eighteenth and nineteenth centuries.

Twentieth century music, however, shows a trend away from the specific tonal mode, even in that music which is still classified as tonal. Impressionistic music has depended upon the tonic-dominant factor only to a slight degree, and is oriented in another "mode" or manner of writing. Increased use of dissonance in almost all schools of contemporary composition has tended to obscure the tonal orientation factor, even when the basic manner is that of tonality. The sole reminder of this system in other so-called tonal music is found in a more or less conventional treatment of the cadence, where the tonic-dominant feeling still remains, even when the music as a whole no longer depends upon the tonal system. Some composers have recognized this state of affairs to the extent that they consciously write non-tonal music, and have tried to orient their music in different ways. The twelve-tone technique in its more primitive forms has been one "manner" or mode of orientation, specific in its rigidity and definite rules of procedure, special in that, by

setting up his own tone row each time, the composer uses a different "mode" for each piece of music. Without the newer developments of this technique, it might have suffered the same fate as mediaeval modal theory: that is, coming originally from an examination of the music, it might then have assumed a static theoretical importance which could not take into account the underlying principles of "special" manifestations of present-day modal orientation.

However at the present time, much more emphasis is being put on the nature of the musical problems in the individual piece of music, than upon the development of a system. It is at this point that I think a study of mediaeval music can be of great importance to the student of contemporary music, and to the composer, for pieces such as the Missa "Caput" give an excellent example of one type of solution to the problem of orientation in non-tonal music---the solution of a unique, individual and distinctive mode or manner, which holds the music together by the homogeneity of its melodic lines and tone-combination flavors. Ernst Krenek[33] has discussed this broader concept of modality in relation to contemporary atonal music; although the vocabulary and style of the two periods varies widely, the orientation problems are much the same in basic principle. But that principle which guides theoretical analysis must be made broad enough so that it can really fit the music, and never so rigid that the music must be arranged to fit the theory--or be rejected--or be considered only as an exception to the specific rule. If the theoretical approach always comes primarily through the music itself, considering its special as well as its specific nature, we can gain a much fuller insight, a much more accurate and helpful view of the problem of mode, whether in contemporary music, or that written five hundred years ago.

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[33]Ernst Krenek, "New Developments of the Twelve-tone Technique", The Music Review, Vol. IV, No. 2, May 1943, 81-97.

A STUDY OF LINEAR DESIGN IN GREGORIAN CHANT AND MUSIC WRITTEN IN THE TWELVE-TONE TECHNIQUE

by

Martha Johnson

INTRODUCTION

The first reaction that people are likely to have to the proposed comparison of the Gregorian Chant with music written in the twelve-tone technique is that of surprise. "Why compare at all," they ask, "two kinds of music so completely different from one another?"

And, indeed, after a superficial comparison this point of view seems to be correct. One gulf between the two kinds of music is the great difference in age. Twelve-tone music has been written only in the last twenty-five years, whereas the composition of the chant flourished a thousand years ago, and ceased practically in the sixteenth century. There are also actual musical differences between these two kinds of music which seem to preclude the possibility of any likenesses. A comparison between the chant in Ex. 36 and the twelve tone music in Ex. 39 reveals these differences quickly. Ex. 36 has but one voice, while Ex. 39 has, as does most twelve-tone music, several voices. Again, Ex. 36 has, as does most chant, a limited range of about an octave, while that of Ex. 39 is much greater, not only in the combined voices, but also in each separate voice.

Most of the other differences between these two examples are like those mentioned thus far in that, in each case, the chant shows a greater limitation than does the twelve tone music. Thus we see that the material of Ex. 36 is seven tones, while that of Ex. 39 is twelve tones. Thus also the melodic intervals of Ex. 36 are in general seconds and thirds only, while those of Ex. 39 are extremely varied. Likewise, the rhythm values in Ex. 36 are limited to eighth notes and quarter notes, while those of Ex. 39 include sixteenth notes, eight notes, quarter notes and dotted quarters, half notes and dotted halves, and (occurring twice) whole notes tied over to dotted quarter notes.

There is one factor, however, which we have not considered yet, and that is the manner in which these various elements, whether they be melodic, rhythmic, or harmonic, are combined to form the whole. It is this factor which we shall investigate in the ensuing pages, considering especially the melodic and rhythmic elements as they are arranged into groups, and considering these groups as they are varied and as they interact with one another to make up the whole.

I. GREGORIAN CHANT

1. CREDO I

The first example of chant which we shall analyze is the Credo I from the Liber Usualis[1] (Ex. 36). This Credo is divided into seventeen phrases, the divisions being marked by double bars. The first seven notes of the piece and the last ten will not be considered as phrases but, respectively, as introductory and closing material. The phrase is divided into "members" by the rather long single vertical bars, and the "members" (or the phrases) into the smallest unit, the "incise", by the small vertical line. Since the members in this piece are approximately equal to the incises, we shall not distinguish between them, but call them both "sections". They are lettered a, b, c, etc.

Examination of these "sections" reveals the fact that almost all of them can be classified as belonging to one of four melodic "groups", with some of the sections containing more than one such group. The melodic groups are as follows (indicated by underlined letters), examples of which can be found in the sections listed below:

Figure 1.

a. Begins	E-F-G	(phrase 11, section a)
or	D-E-F-G	(phrase 7, section a)
Ends on	E	(phrase 11, section a)
or on	D	(phrase 12, section a)
b. Ordinarily D-E-G-A, is sometimes contracted to E-G-A and is sometimes expanded.		(phrase 11, section b, first four notes)
c. Begins	A-B flat-A	
Ends on	G	(phrase 11, section b, starting on fifth note)
d. Begins	E-F-G	(phrase 11, section c)
Ends on	G	

Groups a, c, and d each divide naturally into two basic "parts": first, the first three notes, which remain the same in every repetition of the group, and, second, the remaining notes, which are constant only to the extent that each group always ends on the same note. We will number the basic parts independently of the preceding grouping. These parts are given in figure 2.

Figure 2.

1. E-F-G, D-E-F-G
2. F-E, E-F-E, F-E-F-E, A-G-F-E, A-G-F-E-F-E, A-G-E, F-A-G-E, F-E-D, A-G-F-E-D
3. A-B flat-A
4. G-F-G, F-A-G-F-G, G-F-A-G-F-G
5. F-A-G, G-F-G, A-G-F-G

Various combinations of the four "groups" make up almost completely the Credo. This can be seen in figure 3, in which, after the number of each phrase, the mel-

[1]The Liber Usualis, edited by the Benedictines of Solesmes, 1938, pp. 64-66.

odic groups are indicated by letter, according to figure 1, and the independent parts by number, according to figure 2, with commas marking off the sections.

Figure 3.

1. c, d, a, c
2. a, b, c
3. a and b, c
4. 4, 4 and 2, b and 5
5. a, a and b, c
6. a, d, 4
7. a and b, c, c
8. a and b, c, c
9. a and b, c
10. a and b, c
11. a, b and c, d
12. a, c, d
13. a, b, c, d
14. a, c
15. a, b and 5
16. a and b and 5
17. a and c

Closer inspection of the "parts" reveals that No. 1, E-F-G, remains unchanged, occurring always as the first three notes of a and of d. No. 2 includes the various endings for a. It has two main divisions: parts ending on E and parts ending on D. Those ending on E vary from the simple F-E to the related but more complicated A-G-F-E-F-E. Those parts ending on D end either F-E-D or A-G-F-E-D.

No. 3 is A-B flat-A, the beginning of c, while 4 includes G-F-G, the simplest ending, and two more complex variations. No. 1, as we have said earlier, serves also as the first part of d, and so the ending of d, F-A-G, G-F-G or A-G-F-G, is No. 5. Note that No. 4 is very similar to No. 5. This similarity will be discussed later.

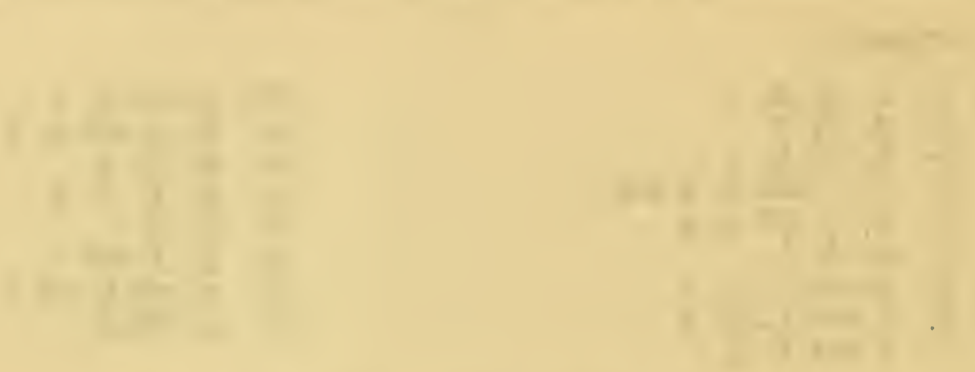
We are now able, with the aid of Figure 3, to follow through the Credo completely and to see the function of each of the groups and the basic parts.

Of the seventeen phrases, nine are in the order a,b,c. Group d, present altogether five times, occurs twice after the succession a,b,c. Phrase eleven, then, proceeding a,b,c,d, is more or less typical. Let us examine it (Ex. 36) to see how the ending of one group prepares for the next, what sort of pattern is produced through the combination of these groups, and what effect is produced by the slight melodic variations in the second half of each group and the rhythmic variations which are produced through repetition or tying of notes.

Group a ascends stepwise to G, prolongs it several beats by repetition, rises slightly up to A and then drops gradually back to E; a slight rise again to F, then back to E, and the cadence is settled. Now b brings us up quickly to A. Another slight pause, and c is introduced, winding from A over the high point, B flat, back to A and farther down again to F, up and down slightly once more, with motion gradually dying out, to end on G. Group d now seems to serve as a sort of coda, recalling first in shortened form the E-F-G, of a, and then closing with F-A-G, which is a modified form of the cadence of c.

We see now how a, when it has a cadence on E, will always prepare group b, how it will always take place in the pattern in the same characteristic way, and how at the same time the slight rhythmic and melodic changes will make each phrase following the same succession a,b,c,d a little different from the other at almost every point.

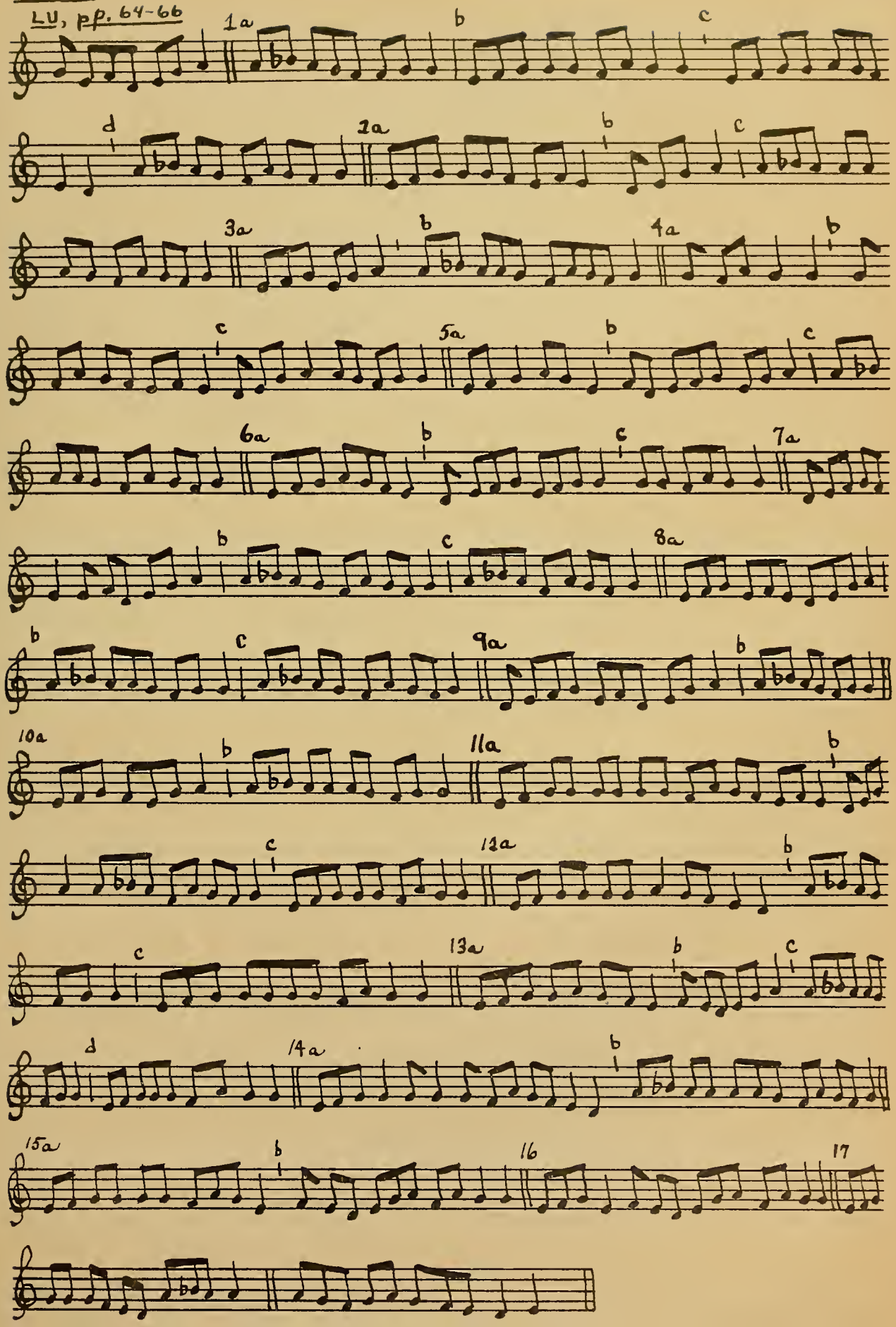
A comparison between phrase 11 and phrase 13, which also has the succession a,b,c,d, will illustrate the sort of variation which occurs. First, phrase 13 is shorter, having 31 notes to the 36 in phrase 11. The G of a is repeated only once, which results, naturally, in a beginning less sustained and more energetic. The



CREDO I

Ex. 36

LU, pp. 64-66



F-E is not added to complete a, but instead starts the next section. Thus an entirely different effect is produced, an impetus being given now to b. Group c, in 13 is much less winding than the c group of 11 because of the ommission near the end of A and F. Group d is the same in both phrases.

These two phrases have several characteristics which are not so carefully maintained in all the phrases of the Credo. In the first place, in these phrases a part is always presented combined with another one to form a larger group. Secondly, only certain combinations of parts are used (1 and 2, 3 and 4, and 1 and 5). Thirdly, a certain order is prescribed for the combination of the groups. And fourthly, the division of a group into its parts is always clear and unambiguous. These statements, however, are not applicable to all of the Credo.

In phrases 1 and 2, the characteristic combination of parts is retained, if not the usual order of groups. Phrase 3a is an example of a group whose divisions are ambiguous. This section seems to present only part 1, (E-F-G) from group a and to contract it with group b (E-G-A) to form a new group. However, the second E of the section (the beginning of b) might be considered as a very much abbreviated form of part 2. Thus the E is ambiguous in serving the double function of standing for 2 and beginning b. When considered in this way, the phrase becomes a very short a (1 and 2), b, c, and the usual order of groups is re-established.

Phrase 4 starts with G-F-A-G as a melodic unit, thus diverging a great deal from the usual order. These four notes have obviously been extracted from part 4. They are exactly the same as the first four notes of the form of part 4 which appears third under 4 in fig. 2. It is also closely related to the ending of group d (F-A-G) which has appeared in phrase 1b, since, by combining F-A-G with the G which precedes it, this very figure is derived.

Section b of phrase 4 illustrates a variance from the second point given above as characteristic of phrases 11 and 13. Here parts are not combined in the customary way. G-F-A-G (not strictly speaking a basic part) forms here the beginning of a group which ends with part 2 (here F-E-F-E).

Section b of phrase 5 is a good example of ambiguity as to points of division. The section is F-D-E-F-G-E-G-A. The F-D-E beginning is characteristic of one of the beginnings of b. And since the section ends on E-G-A, the whole could be considered as an elaborate variation of b. However, by dividing after F-D, we see that the rest of the section is exactly the same as phrase 3, section a, examined above, and thus is a complete a, b.

In summary, the Credo is built up, first, of relatively long units of notes, these units being arranged in a characteristic order which can be varied by the repetition, the omission, or the rearrangement of groups. The groups next, are made up of smaller parts which can be isolated from the group to become independent or to be recombined into new groups. And the parts, finally, can be varied internally by slight extensions and contractions. The variation of a smaller unit has in every instance an effect, be it ever so slight, upon each of the larger units of which it is a part, this effect varying from a simple contraction or expansion to a significant change in the usual relationships of the units.

2. THE GRADUALE "JACTA COGITATUM"

The second example of the chant which we will analyze is the Graduale, Jacta Cogitatum, on page 982 of the Liber Usualis (Ex. 37). A comparison between the appearance of the Graduale with that of the Credo reveals several differences. The Credo is divided by many double bars, while the Graduale has but two. The range of the two is much different. That of the Credo is a minor sixth (D to B flat); that of the Graduale, an eleventh (D to G). The range of the Graduale, then, is more than twice that of the Credo. That the material of the two is different is shown by the lack of a B flat in the Graduale. Few repeated tones can be seen in the Graduale as compared with the many repetitions in the Credo.

The comparison between the two with regard to form and pattern will require a much more careful analysis. We remember that the Credo was made up of many phrases, each more or less equivalent to the other, being composed generally of the same basic groups, these groups varying slightly in each occurrence, but appearing as a rule in the same order.

The Graduale is not thus made up. The phrases, which we consider to be the longer sections, marked off by a double bar or a long single bar, are, in the first place, by no means equivalent to one another. Now if the relationship between the phrases is not that of similarity, then what is it? One way to answer this question is to compare the phrases with regard to the pitch and the position within the phrase of the high point. It will be remembered that in the Credo the high point of almost every phrase was B flat, and that this B flat usually occurred near the end of the phrase.

The high point of the first phrase of the Graduale is F. Occurring twice, its first appearance near the middle of the phrase is preceded by a rise, within a few notes, of a complete octave. Near the beginning of the second phrase is the high point, E. The melody then progresses gradually downward, with a temporary rise to C near the end of the phrase before the cadence on G. The high point of phrase 3 is again F. Now, however, it is near the end of the phrase, and is followed by a rather quick descent to the final G. A double bar here marks the end of the first half of the piece.

We can see, then, in this first half of the Graduale that the phrases differ from one another with respect to high points; and now we can observe that a pattern is formed through the combination of such differing phrases. We notice that the general trend of the complete line is downward, with the fall, however, preceded by the quick beginning rise and followed by the return to F before the final drop to G.

The phrases of the second half of the piece form another pattern. The high point of phrase 4 and at the same time of the whole piece is G, occurring here near the end of the phrase. The high point of phrase 5, again almost at the end of the phrase, is E. Phrase 6, however, contrasts with phrases 4 and 5 since it has its high point, F, near the beginning, drops to G, and rises in the second half to D to drop quickly to G. Phrase 7 again starts high and descends to the ending on G. This half of the Graduale, then, falls into two parts, the first having two phrases which rise to their high points and the second having two phrases which descent from their high points. Comparison of the first two phrases (4 and 5) shows that, while their first halves are the same, the second half of the second phrase is shorter and lower than the second half of the first phrase. Phrase 7 differs from phrase 6 in being much more extended.

There is not, then, in the Graduale any recurring phrase pattern made up of similar sections as there was in the Credo. However it was this pattern which was responsible for much of the unity of the Credo. Another unifying factor in the Credo was the constant use of the basic parts, occurring as they did in various forms and combinations. We will examine the Graduale, then, to see if it has any short melodic units corresponding to the basic parts of the Credo. Let us take the first three notes of the piece (G-C-A), consider them as a group, and see what use is made of them. (The group is marked off and numbered 1 in Ex. 37.)

The first similar group is found by combining the second note of the piece, C, with the third and fourth notes, A and G (no. 2). Thus we have C-A-G, a rearrangement of the group G-C-A. The group is found a third time at the beginning of the next incise (no. 3). Here is is G-A-C, which is yet another arrangement of the same three notes and which is also the retrogression of the second appearance of the group. Not for a long distance now do the notes A-C-D appear together. However, continuing the second incise we come to the notes A-C-D (no. 4) which are reminiscent of the group. The similarity is obviously found in the combination of a minor third with a major second and in the melodic direction, which is the same as that of groups 2 and 3. No. 4 is, in fact, an inversion of no. 2 transposed up a step.

More obviously related to the beginning groups, however, is no. 5, C-D-F, which is group no. 2, G-A-C, transposed up a fourth. Continuing, we find group no. 6 to be a transposition of no. 4. No. 7 is related more distantly, since its third is major and its second, minor. The next occurrence of this group is no. 8 in the second phrase, which is the inversion of group no. 7. No. 9 is an inversion of no. 6. Group no. 10 is the same as no. 2; no. 11, the same as no. 3; and no. 12 is the retrogression of no. 1. The group continues to be used in various forms through the second half of the Graduale. We will not follow it through any farther, however.

We see that the use of this group differs a great deal from that of the basic parts of the Credo. Each of the basic parts has a particular pitch level, while this group may be transposed to various pitches. Furthermore, in the Credo the variations of inversion, retrogression, and retrograde inversion played no significant part. We will, therefore, call these groups motives rather than parts.

As is indicated by the comparison made above between the motives and the parts, the two sorts of groups have differing relationships to the melody outline. Each part is identified with a particular section of the phrase pattern, which has its characteristic pitch level and direction. Here, on the other hand, one motive is used in every section of the phrase and on all the available pitch levels. The motive, then, is actually independent of both pitch and direction, and is constituted only by its combination of intervals. It is able therefore to form through its various forms and transpositions complete phrases of the different kinds described earlier.

The design of the Graduale, however, is not actually so simple as this. As one reads through the piece, other motives become evident. In the first phrase the various motives are marked off. It will be observed that these motives with their respective interval combinations (and usually with their respective direction combinations) are used throughout the piece. Seeing the great complexity of overlapping motives in this phrase, one might well wonder what the importance of each is. Obviously it would be very difficult to keep track of all of them through the piece or even to notice them all. In a particular complex of motives, then, is each motive of equal importance or are there factors which cause some motives to emerge more clearly than others? We shall examine the music for such factors.

An obvious means of motivic emphasis is the occurrence of a syllable on the first note of the motive. By this means the beginning of the motive is clearly indicated, and the notes of the motive are joined together by the common vowel sound. This sort of grouping is illustrated in the first seven notes of the Graduale. There, of the several motives marked, those beginning on the first and the fourth notes stand out most clearly. The seventh note illustrates grouping by means of rhythm. The lengthening of a note here connects it with the notes preceding it rather than with those following it.

Notes 8-9-10 show grouping by means of the repetition of a group sounded previously. We showed in our analysis that these three notes have occurred together before. Hearing them together again, we group them into a unit. Yet another means of grouping is the ictus, which is a sort of accent more or less freely placed by the composer.[2] The ictus occurs on every second or third note, thereby forming groups of two or three notes. We have marked these groups in Ex. 37 by connecting with a flag the eighth note receiving an ictus and the one or two eighth notes following it, and with a slur the quarter note and the single eighth note following it.

The ictus, occurring as frequently as it does, naturally is quite influential in determining which groups will stand out. Thus a three-note motive which is also an ictus grouping will emerge more clearly than one which is not. However, not all ictus groupings are motives. A two-note ictus group, for example, is too short to be a motive; and repetition and variation are necessary in order to establish as a motive a three-note ictus grouping or a four-note ictus grouping (that is, two two-tone ictus groups). It is true of the rhythmic and verbal groups as well as of the ictus groups that repetition and variation are necessary in order that the group be established as a motive.

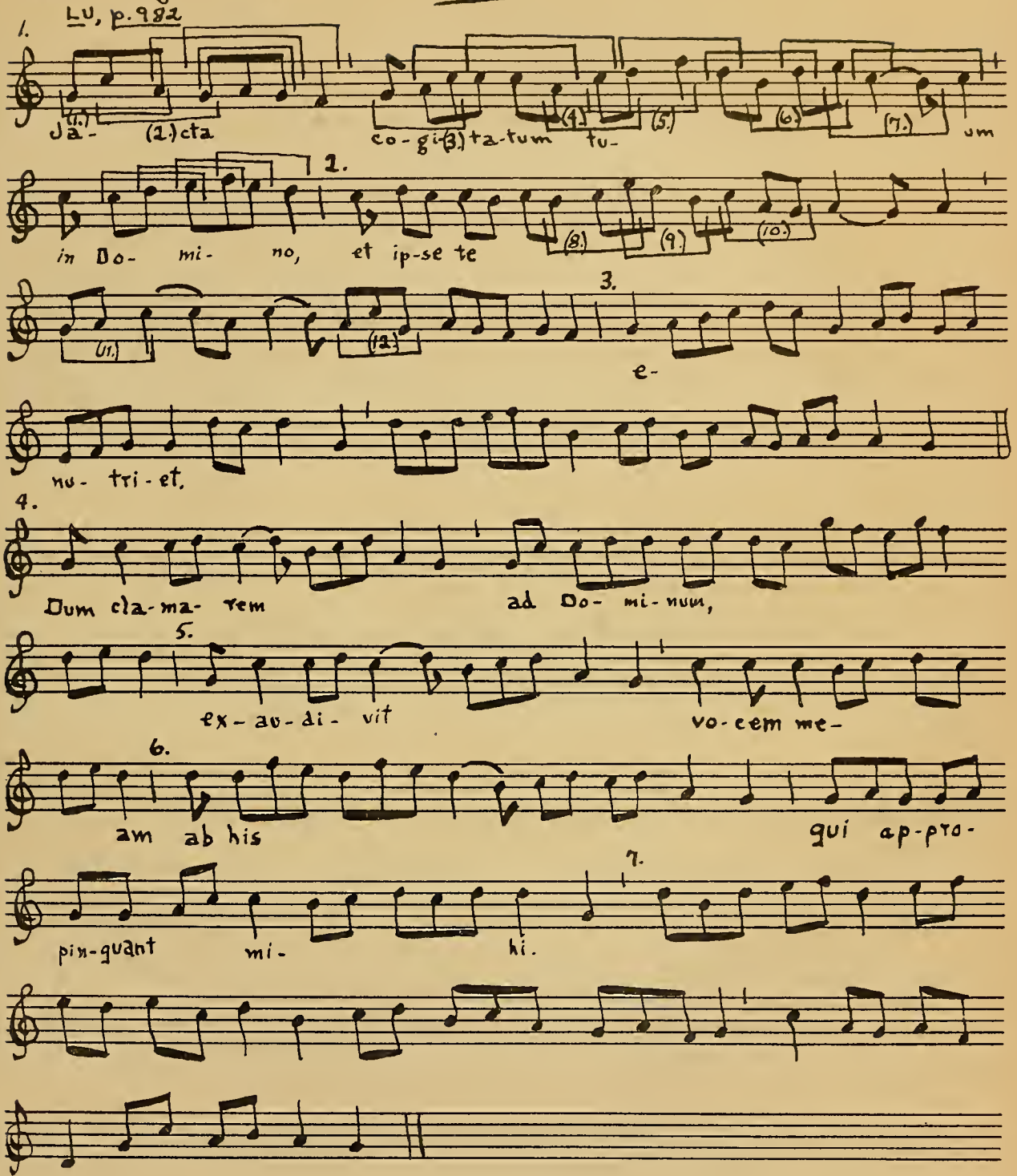
We have in this Graduale, then, a variety of melodic units characterized only by their intervallic and directional combination, and able, therefore, to be varied by transposition and by inversion, retrogression and retrograde inversion and to be freely combined to form varying phrase patterns, with the emphasis being shifted all the while by means of rhythm, meter, and syllables from one to another of units present.

[2] for full discussion of the nature of the ictus, see pp. 10 ff.

Jacta Cogitatum

Ex. 37

LU, p. 982



II. TWELVE-TONE MUSIC

1. ANTON WEBERN'S STRING QUARTET, OPUS 28

The purpose behind the establishment of the twelve-tone technique as well as the general nature and function of the twelve-tone row (or series) has been described as follows:

> "...The twelve-tone series owes its existence to the desire to establish a common denominator for all the melodic phenomena of a composition. The utmost degree of coherence, of mutual relatedness of the simple element, being one of the chief artistic aims of Schoenberg and his followers, there was only one step from bringing the independently invented motives of a composition into close relationship to creating first a melodic prototype which would comprise the whole available material in a characteristic pattern, allowing the derivation of the individual motives from that pattern, in which procedure their relatedness would be ascertained by their originating in a common matrix." [3]

The "melodic prototype", referred to, is of course the twelve-tone row, which is simply the twelve tones of the scale arranged in a particular order. Thus the melody starts with the first note of the series and follows it through to the end, whereupon it starts again at the beginning. Any note may appear at any octave level, and, of course, non-melodic factors such as rhythm and meter are not predetermined. Use is often made of the inversion, retrogression, and retrograde inversion of a series, and of transposition, by means of which the complete series in its original form and in the three other forms just mentioned can be moved to eleven other pitch levels.

Twelve-tone rows can be and have been used in many different ways. A work in which they are used in a rather easily understood fashion is Anton Webern's String Quartet, Opus 28, (Ex. 38)* published in 1939. Besides affording few complications in the use of the twelve tone series, this work offers interesting features for a comparison with the Gregorian chant.

Webern uses the following series in this quartet: G-F sharp-A-G sharp-C-D flat-B flat-B-E flat-D-F-E. This series divides into three related four-note groups marked off on the series above, the second group being a transposed inversion or retrogression of the first, and the third a transposition of the first. The only intervals contained within each of these small groups are minor seconds and minor thirds, while the interval separating the first group from the second and the second from the third is a major third.

For about the first fifteen measures the quartet moves along almost in a single voice. The only departure from this monody is an occasional vertical interval of a third or a sixth. Thus it is much like the single voiced chant.

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[3] Ernst Krenek, A Study of Cadential Formations in Atonal Music, p. 2, 1940. (See Preface, footnote 22), as quoted in: The Music Review, Vol. IV, no. 2, May, 1943, p. 82.

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The first phrase presents the series in whole and half notes with the intervals of the seventh and the ninth emphasized in the melody and with the third and sixth occurring occasionally between the voices. The second phrase (measures 7-10) is a variation on the first, revealing more clearly than the first the division of the series into the four-tone groups. This phrase presents each of the four-tone groups in an untransposed retrogression of the form in which they appeared in the first phrase. Now this would seem to be a violation of the principle stated above that the twelve notes must continue to appear in the same order as that in which they first appeared. Thus the note that was fourth in the first phrase is now first, the note that was third is second, and so on in this order: 4, 3, 2, 1, 8, 7, 6, 5, 12, 11, 10, 9.

It is interesting to see how Webern accomplished this while still actually maintaining the series in its correct order. We see in Ex. 38 that the series is in its original form until measure 7, and that the next eight notes are the completion of a transposition of the series which has started on the E flat of measure 5. After the completion of this transposition in measure 8 we see again that the next eight notes finish another transposition started on the B of measure 8. Then, starting from the G of measure 11 (the ninth note of the B transposition) we have the series again on its original pitch level.

Obviously it is more than a coincidence that the first eight notes of the series on G are duplicated in the last eight notes of the transposition at a major third below, that is, on E flat. The reason for this correspondence lies in the construction of the row. Thus the second group of notes is a retrogression of the first at a major third above. Consequently, when the series is moved down a major third, the second group is located where the first formerly was. A similar relationship exists between the second group and the third.

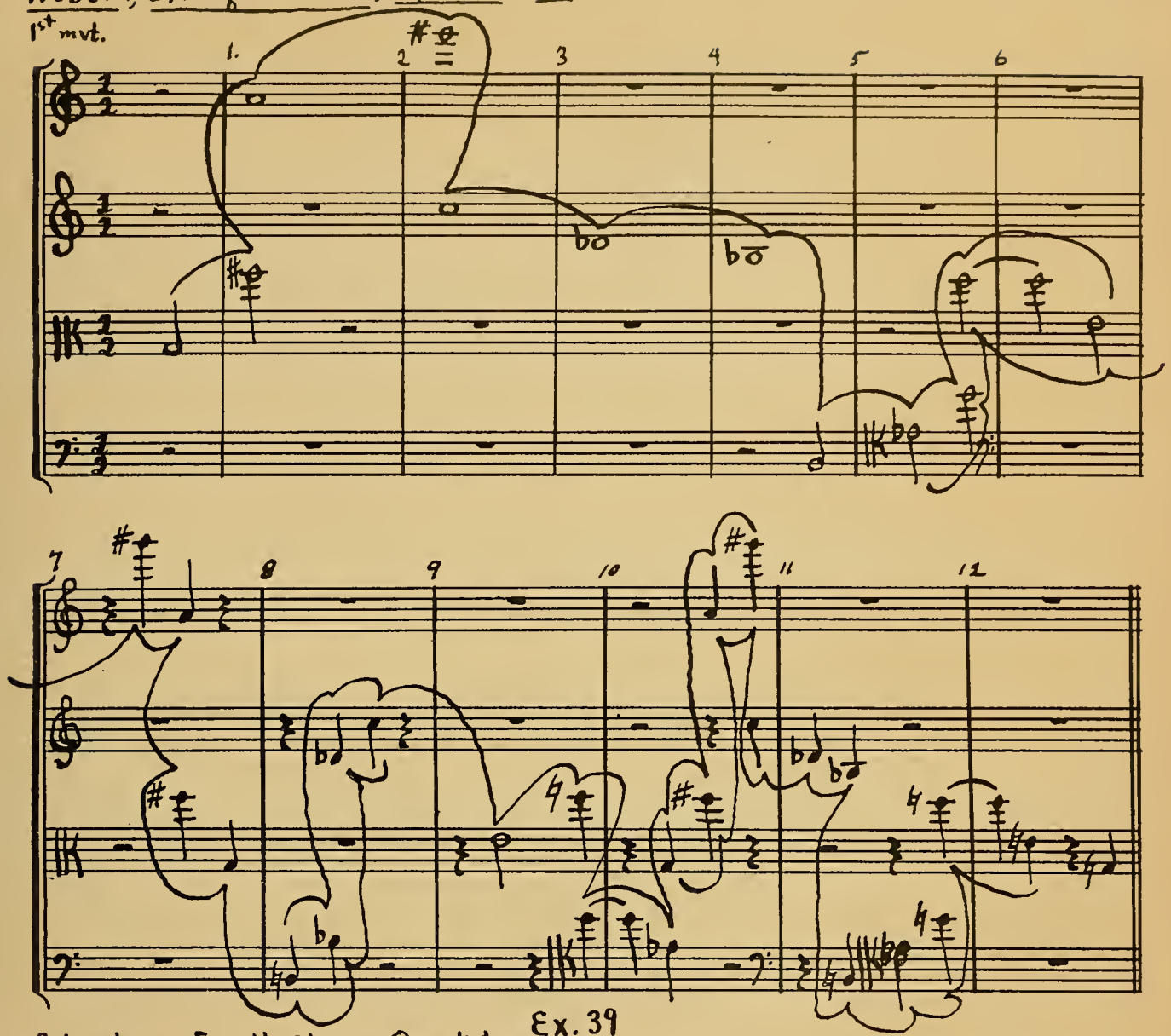
We have found that phrase 2 does more than vary phrase 1 group for group, since running through the second phrase and joining it to the first and the third phrases is the series with its succession of four-tone groups in its original form and in the retrogression and with the successive major third transpositions of the groups. The first group of the second phrase, for example (measure 7), besides being the first of three retrograde versions of the three groups of the original is also the second group of three related to the original by transposition. Therefore, as a second group it is related to the group preceding it by retrogression and transposition and to the group following it by retrogression and another transposition.

Since in phrase 2 in each of the four-tone groups the second note is sounded together with the third, each group sounds like three notes rather than four. The effect in this phrase is that of a descending group of three notes, followed by an ascending three-note group, and then by a three-note group which ascends and descends. If we look now at the first phrase, we see that the same three groups are present in a different order; the ascending group coming first, the descending group, second; and the ascending and descending group, third. Another variation of the second phrase on the first, besides this change in order, is the change in rhythm, the second phrase consisting almost entirely of quarter notes.

The third phrase, which starts on the G of the tenth measure and ends on the second note of measure 12, has the same notes as the first phrase. However, here only quarter notes are used, and two notes are sounded together more frequently than before. In fact, each group begins on the same beat as that on which the preceding group has ended. Thus the third phrase sounds both like a succession of three-note groups (if one considers the three-note melodic divisions which appear in each part in measures 10, 11, 12) and like a succession of two-note groups (if

Webern, String Quartet, Opus 28 Ex. 38

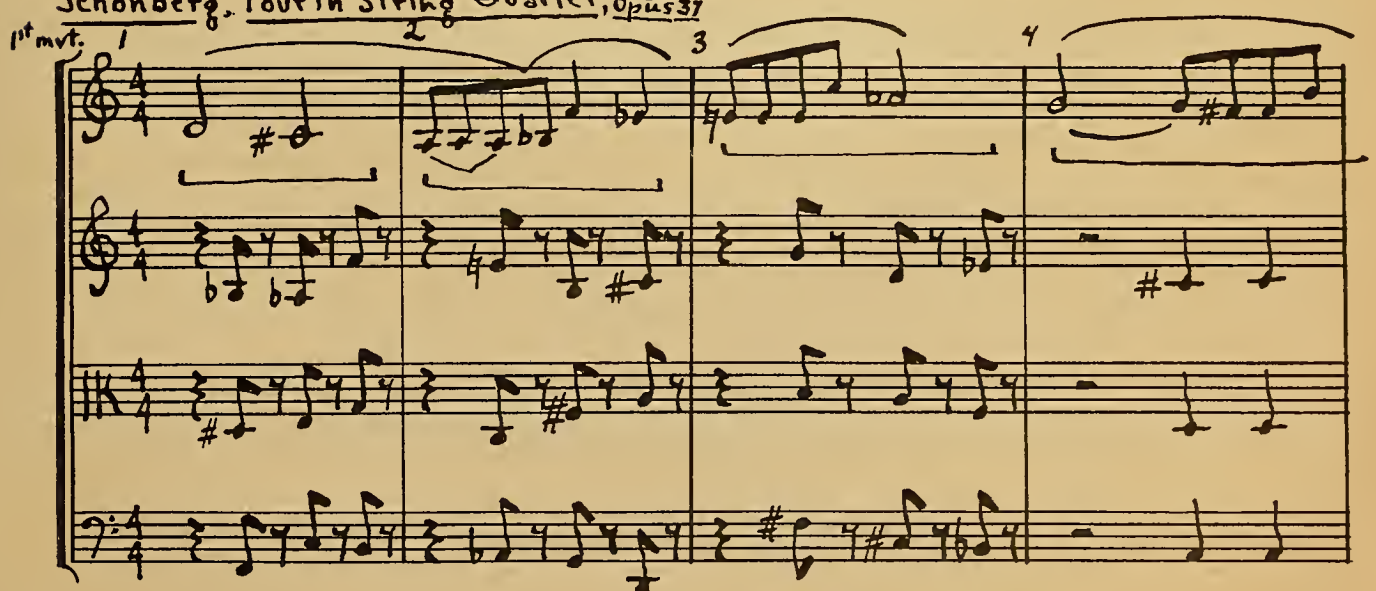
1st mvt.

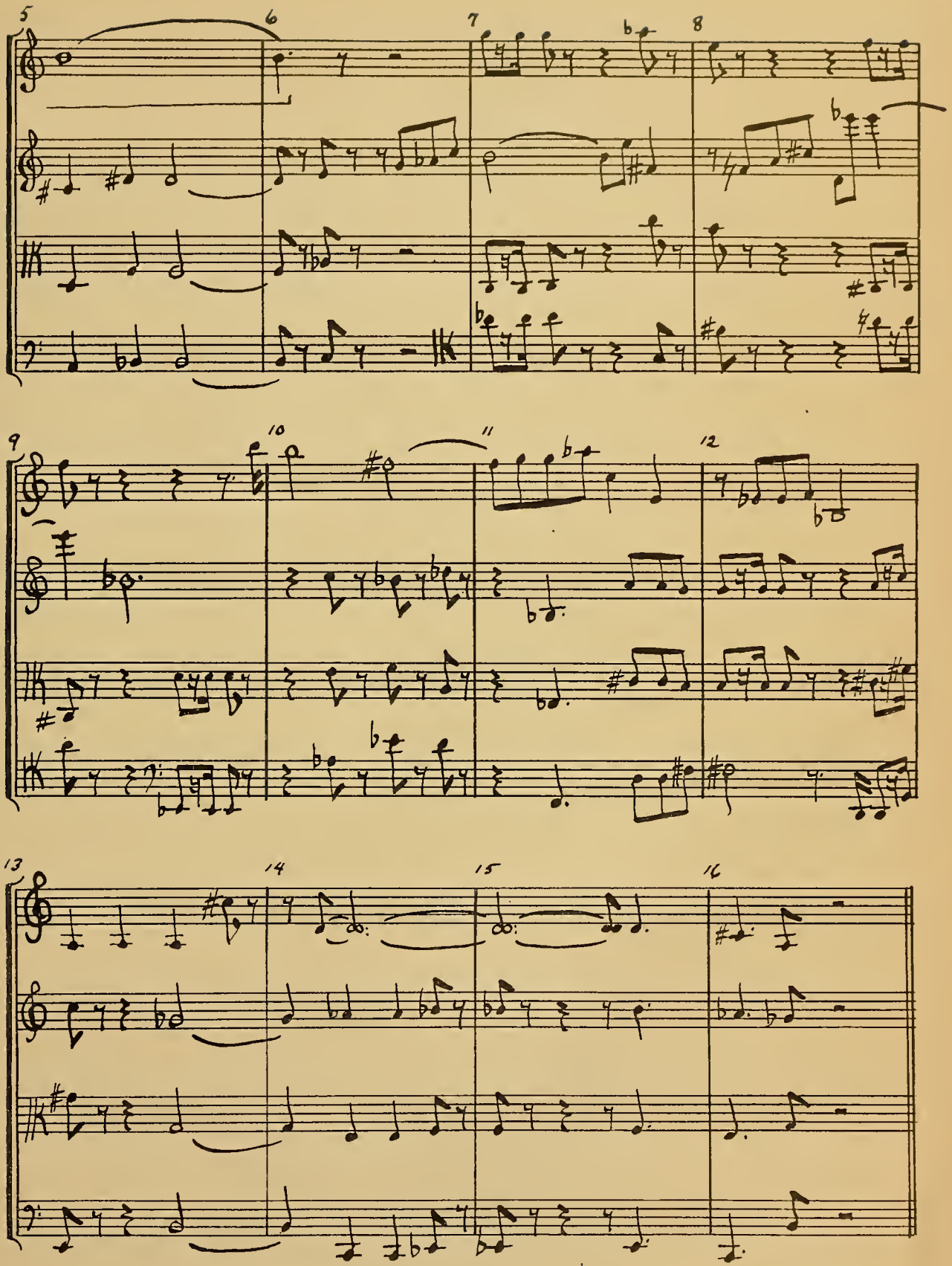


Ex. 39

Schönberg, Fourth String Quartet, Opus 37

1st mvt.

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one considers each beat which has two notes sounded simultaneously, and the following single note). The formation of this last phrase into groupings of two quarter notes by the frequent harmonic intervals is the culmination of a process of gradually speeding up which was started in the second phrase with its three-note groupings and its extensive use of quarter notes.

In comparing these first few phrases with the chant we find, first, that here as in the chant (especially the Graduale) there are short motives which are varied by transposition and by such processes as retrogression and inversion and which in this way completely make up the structure. And related especially to the Credo is the predetermined succession of motives. However, here the number of melodic groups is much more limited than it was either in the Credo or the Graduale. Thus here we have actually only the one four-tone group. Also limited is the possibility of melodic variation. Thus the contractions and extensions which brought variety into the rather rigid group succession of the Credo are not possible here, since tones cannot be inserted into or left out of the twelve tone series. How is it, then, that with the melody as severely restricted as it is in the first three phrases the effect is not one of deadly monotony? The answer is that there are rhythmic and harmonic variations here that were not present at all in the chant. Thus we have the gradual increase in speed through the first three phrases and the obscuring of the four-tone combinations by the occasional vertical intervals.

The next important development in the piece starts in measure 16. Here further use is made of the possibilities in variation offered by the presence of several voices rather than one. The three types of groups (ascending, descending, and both ascending and descending) are still being used, but now each of the groups actually contains but three notes. Thus the original groups of four tones have been abandoned with, however, their characteristic melodic directions retained. The use made of the several voices is that, while the three types of three-note groups are being presented in one voice (the effect is that of one voice, although the melody is actually passed back and forth between the first and second violins), a sort of retrogression or inversion of each group is being presented almost simultaneously with it in another voice. A further extension of this sort of variation is made in measures 26-32, where the three kinds of three-note groups occur in one order or another in each of the four voices. The result is very complex, with closely related groups entering in imitation or in variation of one another at different times in each part.

In considering this opening section of the Webern Quartet, we have found that in its general approach it is very similar to the chant. As in the chant the whole structure is carefully built up through the use of small elements of design. Some difference can be seen between these design elements as they are in the chant and as they are in this quartet. In the chant for example, the exact pitch of each note in a group and the exact intervals within the group were of more importance, than they are here. Thus in the Credo each group had a particular pitch level on which it occurred, and in the Graduale each group was characterized by a particular combination of intervals.

Now in the first three phrases of the quartet the situation is somewhat the same. Each four-note group, whenever it appears, has the same notes and the same intervals (even though the retrogression of each group in the second phrase changes the order of the notes and hence of the intervals). However, in the other phrases discussed this is no longer true. In these phrases the difference between the groups is a difference in melodic direction. The intervals making up a particular three-note group are not determined with great exactness. In each of the groups there are two types of intervals used; the seventh and the ninth being one type,

and the third, sixth, and tenth another. The four-tone groups that we observed in the series and in the first three phrases are no longer being used. The series, then, is not now considered as being made up of three groups of four tones, but rather of an alternation of the two kinds of intervals. Thus there is no basis in the series for a division into three-tone groups. Instead, the series provides what is common to these three groups. The succession of the two types of intervals is present in each of the three different three-tone groups. The series, then, is in a sense, a uniform mixture of the two kinds of intervals; and it is from this mixture that each of the three groups gets its material, which it then arranges each in its characteristic way; ascending, descending, or both ascending and descending.

We have spoken of the differences in the treatment of groups in the Webern Quartet as compared with the chant. The most important differences are due to the necessity of extending the principle of variation so that it will take care of the possibilities offered by the presence of several voices. The result is an emphasis on verticality plus a decrease in the importance of continuous development within a voice. In the chant, of course, all the complexities of combinations of groups, of variations of these groups, and of overlappings between groups must take place within one melody. And consequently all thought takes place, as it were, on one level, with variations being referred always horizontally and never up and down.

Now when the development of the structure of the string quartet is compared with that of the chant, it is found that many of the developments that in the chant would occur within one melody now occur often almost at the same time in several voices. This results, incidentally, in the overlappings similar to those that were observed in the Graduale. Here they occur in a different manner, however, since the several overlapping groups are each in a different voice. Thus here one particular beat may have on it in different voices the first note of one group, the second of another, and the third of another. These groups too can be variations of or one another instead of being three different groups. In the Graduale the three overlapping groups are all in one voice, and consequently the same note may occur in three different groups, as the first, the second, or the third note of the three different groups.

In closing the discussion of the Webern String Quartet, we may remark that the applications of the principles of construction of the chant to twelve-tone music with its greater variety of material, range, rhythmic values and its polyphony, while often much like those in this quartet, are also often quite different.

2. ARNOLD SCHOENBERG'S FOURTH STRING QUARTET

The Schoenberg Fourth String Quartet, Opus 37, (published in 1939) presents a great many contrasts to the Webern quartet. In the first place the twelve-tone series which it uses differs from that of the other quartet in containing a much greater variety of intervals and in having many fewer internal relationships. Thus the series of this quartet, D-C sharp-A-B flat-F-E flat-E-C-A flat-G-F sharp-B, contains five different intervals. The half step occurs five times, the minor third three times, the fourth, twice, and the whole step, once. There are no such correspondences between different groupings of the series as there were in the Webern. The nearest thing to an exact correspondence is the relationship between the first three tones of the series and the last three.

In Ex. 39* the series can be seen in its complete form in the first six measures of the first violin part. However, in these same six measures in the three lower voices the series is used in a way which is much different from Webern's. It is split into four units of three tones, (as indicated in the series above) which units are then used as chords to accompany the melody of the first violin part. We have numbered these units 1, 2, 3, and 4 according to the order in which they appear in the series, and we have numbered the chords correspondingly. It can be observed that three chord units are present in each measure (with measures 4, 5, and 6 considered as a unit) and that the remaining unit needed to complete the series for each group of three chords is found above proceeding melodically in the first violin part (except for the first measure, in which the last note of the first unit, A-D-C sharp, is delayed until the second measure). Thus, through the combination of the chords and the first violin part, there are four presentations of the series. And thus also the melody in the first violin is at the same time a complete series in itself and part of four other series. However, these "measure series" do not follow the law of the twelve-tone technique which prescribes that the order of the tones of the series should not be changed. Thus, for example, we have in measure 3 the succession of units 3, 4, 1, 2, followed by units 4, 1, 2, 3 in the fourth, fifth, and sixth measures. This treatment of the series in these measures shows the establishment of a greater independence for the units within the series at the expense of the strict succession of the twelve-tones.

This use of parts of the series as harmonic (or vertical) units is a method of presentation and variation of groups of notes which is not used in the Webern Quartet nor, of course, in the chant. It might be valuable to compare the effect produced by the simultaneous sounding of notes with that produced by their successive sounding, especially since in this piece the notes presented in the vertical units are also being used melodically. Now when three notes are sounded together, the factor of melodic direction within the three notes is completely eliminated. Thus, for example, the two groups D-E-B and B-E-D, which are very different from one another when presented melodically, are exactly the same when they are presented vertically. On the other hand, although melodic directions within the group are absent, intervallic relationships among the notes come out much more forcefully in the vertical presentation than in the melodic. Thus the most characteristic thing about the group D-E-B is its particular intervallic combinations, which is a whole step, a major sixth, and a perfect fifth.

These harmonic groups, welded as they are into a compact unit, are particularly suited for variation by rearrangement of notes or by the transposition at the octave of notes. Thus, in the harmonic units of the first six measures, almost every example of a particular unit differs in the arrangement of its tones from every other example. This sort of variation is possible because any interval is actually very much similar to its inversion within the octave. A second, for example, sounds much like a seventh; a sixth, like a third; etc. It is possible also because of the great similarity between an interval and its extension by an octave (e. g., the third and the tenth). Unit four as it appears in measures 1 and 3 illustrates this sort of variation by rearrangement of notes by octave transpositions with its resulting inversions within the octave. Thus the twelfth (a fifth plus an octave) between the B and the F sharp in measure 1, becomes a fourth (the inversion within the octave of the fifth) in measure 3, while the seventh between the G and the F sharp in measure 1 becomes a ninth in measure 3. This sort of variation of a unit is obviously the same as that which is used in tonality in forming the various inversions of chords.

The first three phrases of this quartet, when all factors are considered, show in a very complicated fashion the sort of variation that we found in the Credo. Groups of notes are isolated from their context and treated as independent units to be varied and recombined. These groups may be either rhythmic or melodic, and their variations may be either rhythmic or melodic. As in the chant also larger units exist, here either rhythmic or melodic, which maintain their general characteristics while being greatly varied in detail. And also as in the chant these two processes of isolation of small groups from their context (with possible variations) and variations of larger groups sometimes fuse when a large group is varied by the transformation of its parts.

An illustration of the way in which a long melody group is varied by such processes is afforded by the first and third phrases of the first movement of the quartet in the first violin part. The first phrase extends from measure 1 through measure 6, the third, from measure 10 through measure 16. The first phrase presents the series in the original form, the third in the retrogression. Consequently the melodic lines are almost entirely different. It is the rhythmic structure which maintains the identity of the phrase, and yet which also shows interesting, although slight changes.

The first phrase, considered rhythmically, divides into four groups consisting respectively of the first measure, the second, the third, and, for the fourth group, the fourth, the fifth, and sixth measures. The second and third groups are very similar, consisting each of four eighth notes, the first three of which are repeated notes, and (in the second group) two quarter notes or (in the third group) a half note. The fourth group is slightly different. However, if it is considered as starting on the preceding A flat (the last note of measure 3) we see that it corresponds to a combination of groups one and two. It is varied melodically from groups one and two by being about a sixth higher and by having slightly different melodic intervals, and rhythmically by having the second half note tied over to the first eighth note and by having the note following the fourth eighth note last for five and a half beats.

The third phrase, differing melodically from the first, starts with the same rhythmic structure as the first, with the exception of a preceding sixteenth note, but changes at the beginning of the second group. As in the fourth group of the first phrase, the second half note is tied over to the first eighth note. The next rhythmic variation occurs at the beginning of group three, where the first of the four eighth notes is lacking. The effect, of course, is the same as if the first eighth note were tied over from the preceding beat. Instead of continuation of group four, which we would expect, there is now a quarter note on A sounded three times. This group of notes is obviously an augmentation of the repeated eighth notes which were in both group two and group three of phrase one.. Following this there is a C sharp, then a sustained D, and, to end the phrase, D-C sharp-A, which are the three notes that began phrase one.

This sort of variation of a long phrase by means of slight changes is reminiscent particularly of the Credo. There, of course, the essential character of the phrase lay in its melodic structure, and it was through melodic changes that the slight variations took place. Here the character of the phrase and the slight variation are rhythmic

It is characteristic of the slight rhythmic variations that we have noted that these very changes which are making the music more diversified often at the same time give it greater unity. This same observation can be made about many of the variations in the chant. Thus we noticed many times in the Credo that it was difficult to decide whether a particular passage was made up of just one group

slightly varied, or whether it was a contraction of two or even of three groups. Now if such a passage is considered as one group which is being varied by extension, obviously the variation is at the same time a unifying factor which makes the piece more consistent, since by means of it this group is combined with one or two others in a closely integrated form, and since also, often, by means of it common elements, hitherto probably unnoticed, among the several groups are revealed.

One such element, common to several groups, whether these groups are melodic, harmonic, or rhythmic, is that of threeness. We have already spoken of the harmonic units, each of which consists of three tones. The first five beats of the piece show other ways in which threeness is used. The most interesting of these takes place in the use of different speed levels. Thus we see that the first violin presents in half notes a group of three tones. (The three A's which begin the second measure actually give the effect of a half note.) The other three instruments each play, in the middle of this process, a group of three quarter notes. Then, starting on the third note of the first violin part, there is a group of three eighth notes. Thus in this section there are three groups of three notes, each of which proceeds at a different rate of speed.

We may observe in these five beats that the melodies formed by the half note and quarter note groups each consists of three different tones, while the melody of the eighth note groups consists of one tone, sounded three times. As a convenient way of indicating that a group has no repeated notes, we shall speak of it as a group of tones. Thus a three-tone group has no repeated notes, while a three-note group may or may not have them.

In measure 4 of the first violin part at the point, mentioned as being a variation on group two, where the first of the four eighths is tied from a preceding beat, we have a new rhythmic group of three eighth notes established. This differs from the other eighth note group in starting on the second half of the beat instead of the first, and in thus having all its accents shifted. Melodically also it differs from the other eighth note group in having only two of its three notes alike. It will be noticed that the note following the three eighth notes is a repetition of the last eight note. This was not true in measures 2 and 3.

What is going on in the other three voices in measures 4, 5, and 6, is a very interesting example of a variation which is at the same time an integrating factor. The first three notes are an augmentation of the repeated eighth note group. This leaves three notes, the first two of which are the same. These three notes are a variation of the new eighth note group which has just sounded in the first violin part. Now the rhythm has been augmented, and the melodic intervals decreased.

These notes in each of the three lower parts in measures 4, 5, and 6 can, however, be analyzed in another way. If they are compared with the first violin part in the same three measures, it is immediately apparent that the melodic figuration in the first violin part of two F sharps and two B's is varied by augmentation in the two C sharps and two D sharps of the second violin part and in the corresponding notes in the other two parts. A corollary involved is that the second, third, and fourth notes in each of the lower parts are an augmentation of the three-note eighth note group.

We can even profitably compare these three measures in the three lower parts with all of measure 2. We have already said that the first three notes in measures 4, 5, and 6 are an augmentation of the first three in measure 2. However, the last three notes need not necessarily be analyzed as an augmentation of the eight notes in measure 4. One could as well say that the six notes in 4, 5, and 6 are complete augmentation of the six in measure 2.

Yet another factor tying these three lower parts in measures 4, 5, and 6 firmly into the structure of the piece is the fact that threeness is emphasized by there being only three different notes present in each voice. One final, and perhaps rather obscure relationship can be pointed out. It will be noticed that the first note in each of the three lower parts is sounded three times, the second note twice, and the third note once. This fact is related somehow to the variation that we observed in the first and second measures in which the rate of speed existed at three different levels: the second twice that of the first, and the third twice that of the second. Here the three levels are not multiples but rather additions. It would be even more accurate to say that they are subtractions, since they are arrived at by subtracting one repetition each time.

Since the time when we started the comparison between the first and the third phrases, our selection of motives has been determined largely by rhythmic considerations. However, it may also be valuable to consider the same material from a more strictly melodic point of view.

We mentioned, when discussing the three rates of speed in the first two measures, that in the three lower voices the three first notes in each voice are three different tones, as distinguished from the first three eighth notes of measure 3, which are all on the same tone. Now if, instead of starting a new group at the beginning of the second measure as we have done, we consider the A which begins the second measure as being the third of a three-tone group starting with D-C sharp (which actually we have already done in the tempo comparison when we called A the third of the half note series), we have the beginnings of a new melodic grouping. Now we may consider the B flat-F-E flat which continue the first violin part as another melodic grouping of three notes, likewise the E-C-A flat, and the G-F sharp-B. Thus we have four groups, each with three tones, which groups are, of course, the four vertical units discussed earlier.

Now, looking at the three lower voices, we see that they likewise each contain four three-tone melodic groups. (Each of the lower voices, however, does not form a series.)

We can now compare these several groups to see what their melodic characteristics are. The first group of the first violin part moves downward twice. The second group moves up, then down to a point between the first and the second notes. The third group is like the second group, and the fourth moves downward and then upward to a point above both the first two notes.

Here we have three different combinations of melodic direction among three tones in only four three-tone groups. It might be profitable to see how many possible combinations there are. The following exhaust the possibilities:

1. up twice
2. down twice
3. up, then down to middle point
4. down, then up to middle
5. up, then down to lowest point
6. down, then up to highest point

Now all these possible combinations except the fifth are used in one voice or another in the first six measures.

This great variety in the combination of melodic direction was observed also in the Graduale. There we had groups which could be identified with all of these. In the Graduale, however, these different combinations were usually employed as a means of variation for a particular group of notes. Thus there we would have, for example, C-D-F, F-D-C, C-F-D, F-C-D, D-F-C, and D-C-F. Probably, of course, all of these variations would not appear in one piece; and probably, also, many of them would appear in transpositions.

The function served by these various combinations in this piece is to show the amount of variety in direction that can be secured by groups limited to three tones. In spite of these limitations, however, there are some melodic correspondences between the various three-tone groups. In the first measure, for example, the group in the second violin is enough like the group in the cello to sound like a retrograde inversion of it. Again, in the second violin part, the third measure group is an almost exact transposition at the minor third of the group in the second measure. And both of them are equal to a transposed retrogression of unit 4 as it appears in the first violin part and are similar to unit 1 in the first violin part. Almost all the groups used, in fact, have a common factor, the combination of a whole or a half step with a larger interval.

Continuing our analysis of the use of melodic groups of three tones, we find that the three notes at the end of measure 6 which begin the second phrase are a transposed inversion of unit 1. In fact, if we follow the second violin through to the end of the phrase, we find that it is a complete inversion of the twelve-tone melodic series which we found in the first phrase in the first violin part. Now, as we know, the octave level of the notes in the series is variable. And, therefore, this inversion will not necessarily keep the same intervals as did the first phrase. We can see this in comparing the fourth, fifth, and sixth notes of the original series and of the inversion. The B-E-F sharp, if it were to be an exact inversion of the B flat-F-E flat (unit 2) of the first phrase should proceed down a fifth to E and then up a whole step to F sharp. Instead it goes up a fourth to the E and down a seventh to the F sharp. This, of course, is different from any inversions which occurred in the chant. It is, in fact, the same sort of variation that we observed in the treatment of the harmonic units; and here, as there, it is the result of inversion within the octave of intervals. Thus it is recognized that going <u>up</u> from B to E is very much like going <u>down</u> from B to E even though the resultant interval is a fourth instead of a fifth. And here, as with the harmonic units, the actual likeness between an interval and its inversion within the octave results in a similarity of intervallic and harmonic color.

Because of the existence of this sort of similarity we have the possibility of great variety in the direction of the melody with, however, the characteristic color of each unit existing in the background as a unifying factor. This is illustrated in the phrase which we are considering. We notice that the next unit, F-A-C sharp, has the same rhythmic structure and melodic direction as the G-A flat-C which began the phrase. Thus it begins the second half of the phrase as a melodically expanded form of the beginning of the first half (having at the same time, of course, its characteristic unit coloring). The phrase continues with a correspondingly expanded variation of unit 2, which is varied also by a shift forward of the second note of the unit to form the climax of the phrase.

It might be wise at this point to integrate the analysis based on melody groups of three tones which we have just been making with the analysis based mainly on rhythmic groupings which we were making before. The correlation of the two is quite clear in the first phrase. In general, the rhythmic groups which we

pointed out are either co-extensive with the melodic groups, or are included within them. The only exception to this statement is the difference in the first violin part in the points of division between rhythmic groups 1 and 2 (between measures 1 and 2) and melodic groups 1 and 2 (between A and B flat in the second measure. This difference in groupings is due, of course, to the fact that the three A's actually do serve a double function in ending melodic unit 1 and in starting rhythmic group 2. This duality, incidentally, was observed in the variation of speed levels pointed out earlier, when the first of the three A's was at the same time the last note of the slowest group and the first note of the fastest group.

The inclusion of rhythmic groups within melodic units results in more examples of "threes within threes", such as we noticed with regard to speed levels in measures 1 and 2 and with regard to repetitions in measures 4, 5, and 6. We have, for example, in the second measure of the first violin part the rhythmic group of the repeated eighth notes included within a melodic unit. Likewise in measures 4, 5, and 6 we have in the first violin part the similar rhythmic group of the repeated eighth note with another tone included within a melodic unit.

Continuing our integration of the rhythmic and melodic analyses, we find in the three eighth notes of measure 6 which begin the second phrase a combination of a melodic unit and a rhythmic group which had been independent up to this point. Thus for the first time the rhythmic grouping of three eighth notes is identified with a melodic unit.

Phrase 3 is a summation of all that has gone before with elements selected in such a fashion that we get the curious impression of time as running both forwards and backwards, meeting in the middle, and arriving at both the beginning and the end at the completion of the phrase.

Now the impression that we have that time is moving backwards is produced through the use of the retrograde form of the series. Thus in the first violin part we have a complete retrogression of the series as it appeared in the first violin in the first phrase; and in the other three parts we have a corresponding retrogression, with the harmonic groups in exactly the order that we obtained by starting at the end of the first phrase and proceeding backwards to the beginning. These two factors, then, are largely responsible for the effect of proceeding backwards through the first phrase.

We have already described how the rhythmic configuration of the third phrase corresponds to that of the first phrase. It is this correspondence that is largely responsible for the impression that the third phrase proceeds from the beginning to the end of the first phrase. Another similarity between the third phrase and the first phrase in its original order is the treatment of the first three chords in the three lower voices. The rhythmic placement of these chords is the same as that of the chords in the first measure of the first phrase. Furthermore, the notes are so distributed among the parts as to produce melodic groupings which correspond to those in the first phrase. Thus the A flat-E flat-D in the cello part (measure 10) corresponds to the F-C-B of the cello in the first measure. Now an abridgement of the process of phrase 1 takes us, in the second measure of phrase 3, to a slightly altered version of the first violin part of measures 4, 5, and 6 (rhythmic group 4) which is then imitated, varied slightly rhythmically and melodically, in the three lower parts. Joined to the end of this imitation is a rhythmic group containing a sixteenth note which we observed in the second phrase. This insertion from the second phrase is now transformed, at the

end of measure 12, into a variation of rhythmic group 4. The process of retrogression is emphasized now in the first violin part in measure 13 by the presence of the repeated note group on A. Following it, a C sharp and a D complete the retrogression of the series, thus bringing us to the first note of the piece. The three lower parts, on the other hand, during measures 14 and 15, are approaching the end of phrase 1 with a variation of measures 4, 5, and 6, as they progressed both in the first violin part and in the three other parts. The relationship to the first violin part of those measures lies particularly in the length of the note beginning the group. The special relationship to the lower parts of measures 4, 5, and 6 is the stepwise progression of the various melodies.

We have then in measure 15, arrived both at the beginning and at the end of the first phrase, having progressed through it both backwards and forwards, with the incorporation, near the middle, of the group most characteristic of the second phrase.

3. ERNST KRENEK'S LAMENTATIO JEREMIAE PROPHETAE

The third and last twelve-tone composition which we shall discuss is Ernst Krenek's Lamentatio Jeremiae Prophetae, opus 93.[4] This is a rather lengthy choral composition which the composer has consciously made to resemble the chant. Even a casual inspection of the piece shows similarities (see Ex. 40 and 41). The rhythm, for example, although more varied than that of the chant, has the same smooth and even progression. The absence of bar lines in the piece reveals that it, like the chant, has no pre-established metric pattern. Melodic similarity is shown by the predominance of stepwise progressions and the relative infrequency of large skips. The chant, as a matter of fact, actually furnishes the basis for a large part of the melodic phenomena, since the first four notes, F-G-A-B flat, of one of the important tone groups are taken literally from the Gregorian setting of the Lamentatio.[5]

The twelve tones are used in a new way in the Lamentatio. From them are formed two six-tone groups which function in a manner which is both similar to and different from that of a twelve-tone series. The process has been described by the composer in the following manner:[6]

First were chosen two six-tone groups which together form a twelve tone series. These are as follows:

1. F-G-A-B flat-D flat-E flat	(inv.) F-E flat-D flat-C-A-G
2. B-C-D-E-F sharp-G sharp	(inv.) B-A sharp-G sharp-F sharp-E-D

Then a group of six "modal" scales, using the same tones as the above six-tone groups but each starting on a different tone, is formed.

1.a) F-G-A-B flat-D flat-E flat	2.l) B-C-D-E-F sharp-G sharp
b) G-A-B flat-D flat-E flat-F	m) C-D-E-F sharp-G sharp-B
c) A-B flat-D flat-E flat-F-G	n) D-E-F sharp-G sharp-B-C
etc.	etc.

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[4] Privately printed, 1942.
[5] Liber Usualis, p. 626.
[6] Ernst Krenek, "New Developments of the Twelve-tone Technique," The Music Review, Vol. IV, No. 2, May, 1943, 91-94.

These are called "diatonic modes" since they are limited to the original six tones. A group of "chromatic" modes is now built by transposing each of the diatonic modes so that it begins on F or on B.

1. a)=a)
   b) F-G-A flat-C flat-D flat-E flat
   c) F-F sharp-A-B-C sharp-D sharp, etc.

2. l)=l)
   m) B-C sharp-D sharp-E sharp-G-A sharp
   n) B-C sharp-D sharp-E sharp-G sharp-A, etc.

The use of the word "mode brings up the problem of modality in the chant and in twelve-tone music. We will not attempt to solve the problem here or even to explain the meaning of the words "mode" and "modality." For the word "mode" we shall substitute "pattern," and shall thus speak of the six-tone diatonic and chromatic patterns. In the Lamentatio each of the six-tone patterns is treated in the same way as are the twelve-tone series in ordinary twelve tone music, which means that each group must be presented with its notes in the established order and that any note may occur at any octave level.

The first part of the Lamentatio which we shall consider is the monophonic section which occurs on page 5, with the text "Jerusalem, convertere ad Dominum Deum tuum." (ex. 40) The piece is divided into three phrases, the first continuing in the text to "convertere," the second to "ad Dominum," and the third covering the remainder. The F series is used throughout, with all its chromatic patterns presented either in the original form or in the retrogression or in both. We shall first analyze the piece for melodic and rhythmic groupings.

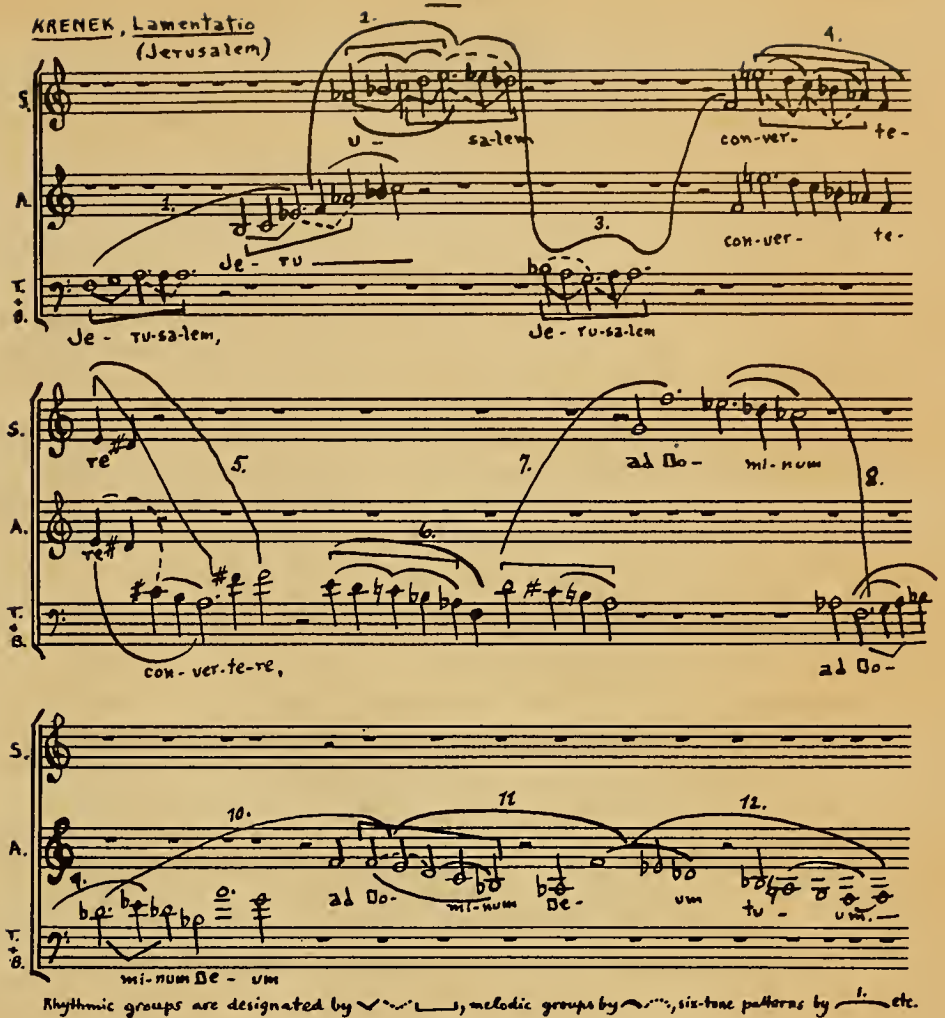
The first three notes, that is, F-G-A, form a melodic group of three tones, the intervals of which are two ascending whole steps. We shall call this combination of intervals melodic group 1. These first three tones also form a rhythmic group of five notes, since the A is sounded three times. Within these five notes there are two smaller rhythmic groups, the first three notes forming the group which we shall call rhythmic group 1. The distinguishing feature of this group we shall find to be the regularity of its rhythmic progression. (The third note, however, may sometimes be slightly longer or shorter than the other two.) This particular example of the group has three whole notes. (The third note is not a whole note but has the effect of one when it enters because of the regularity of the progression.) The three A's form another three-note rhythmic group which we shall call rhythmic group 2. This group consists of a dotted half plus a quarter plus a dotted whole note. And now we shall call the five-note group which combines the two rhythmic groups rhythmic group 3.

Starting now with the B in the alto part, rhythmic group 3 occurs again. Rhythmic group 1 (B-C-E flat) has here been diminished to a half note progression. Also diminished is the value of the last note of rhythmic group 2 (A flat). We notice that these five notes differ melodically from the first five.

The A flat, besides ending the five-note group just described, begins a group of seven notes which ends on D flat. This group divides into three parts: A flat-B flat-C, C-D-E, and E-E flat-D flat. The second and third parts are, respectively, rhythmic groups 1 and 2 and hence together form again rhythmic group 3. This third rhythmic group 3 is exactly the same rhythmically as the second. Its melodic figuration, however, differs from that of either the first or the second rhythmic group 3. The first three of the five notes, C-D-E, are like the first three notes of the first rhythmic group 3 in being a melodic group 1. The last three, E-E flat-D flat, however, differ melodically from any of the groups

Ex. 10

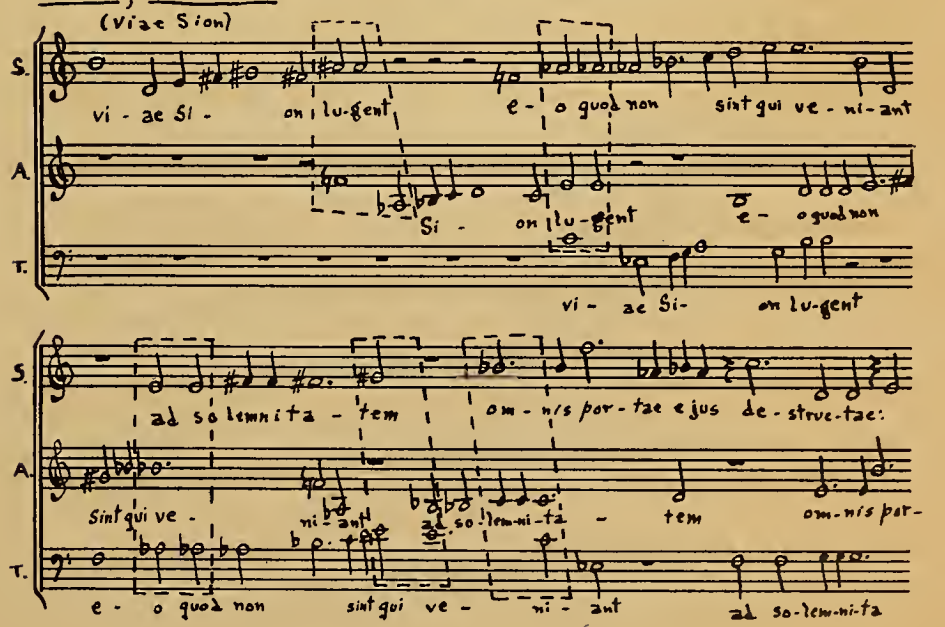
KRENEK, Lamentatio
(Jerusalem)



Rhythmic groups are designated by ⌒, melodic groups by ⌒, six-tone patterns by 1. etc.

Ex. 41

KRENEK, Lamentatio
(Viae Sion)



yet described in proceeding in descending motion and in being composed of a half step plus a whole step. This combination of intervals we shall call melodic group 2. Considering the complete seven-tone group again, we observe that the first three notes, A flat-B flat-C, form another melodic group 1. The seven notes, then divide into three three-tone groups, the first two each being both a rhythmic group 2 and the new melodic group 2.

The next five notes make up a fourth rhythmic group 3. The first three notes, B flat-A-G, form the second specimen of melodic group 2. It will be noticed that, while the first melodic group 2 formed a rhythmic group 2, this one forms a rhythmic group 1. Thus we find here the process observed so frequently in the Schoenberg of combining a rhythmic and a melodic group which hitherto have been separate. Occurring at the end of rhythmic group 2 is a repeated note, which, we will remember, we have not observed since the first rhythmic group 2 of the piece.

With this last five-note group we have finished the first phrase. At this point we shall go back to the beginning and see what has been happening to the six-tone original and retrograde chromatic patterns. The first six-tone pattern, extending from F to E flat, comprises melodic group 1 and the beginning half-step and minor third of the second five-note group. The second six-tone pattern, continuing from the F in the alto part ot the E in the soprano, finishes the second five-tone group with its F and its A flat (forming a minor third) and, continuing from A flat through E with four whole steps, makes up the first five notes of the seven-note group. A retrograde pattern starts now with the E flat and D flat which end the seven-note group, continues through the group of notes in the tenor which completes the phrase, and finishes on the F in the soprano which starts the next phrase. The E flat-D flat which begin this six-tone pattern combines with the E from the preceding pattern to form melodic group 2. The next three notes, B flat-A-G, form, we remember, melodic group 2, after which the order of the six-tone pattern is slightly varied by a return to the preceding A. The F, in a higher register and beginning the next phrase, completes this last six-tone pattern.

In examining the function of the six-tone patterns in this phrase, we may consider to what degree they emerge as units distinguishable from the small groups which occur within them. If we proceed from the beginning of the piece, we are aware when we hear the second F sounded that a reference is being made to the first note of the piece. When, following the second F the melody continues to ascend it becomes clear that this F has started a series of tones corresponding to the first six at a higher octave. The intervals in this series of tones are seen to be approximately the same as those of the previous six arranged now in a different order. Thus the F and the A flat which follows it form a minor third, which is the interval that ended the previous group of six tones. And thus the series of four whole steps refers back to the three whole steps which began the first group of six tones. By the time that we arrive at E, then, we are more or less clearly aware that we have progressed through two corresponding groups of tones. We have recognized that both start on F, that approximately the same intervals are contained in both (although the first has a half step which the second lacks, and the second has a whole step which the first lacks), that almost the same melodic range has been covered by both (F to E flat by the first and F to E by the second), and that each has the same number of tones.

The third six-tone pattern is much less clearly distinguishable than the other two. Since it is a retrograde pattern, there is no F making clear the beginning of the pattern as there has been before. The intervals are not easy to follow because of the rests and large skips which we have observed separating the

second tone of the pattern from the third and the fifth from the sixth, and because of the repetition of G after the sounding of the note following it in the pattern. There is no similarity between this group and the preceding two in range, and the likeness in the number of tones is not obvious.

The first two six-tone patterns, then, emerge more or less clearly as similar units. Considered as such, the melodic likenesses and differences between them are quite obvious. We observed the fact that five of the six intervals of one pattern were duplicated in the other, but that the order of these intervals was different in the two patterns. Thus the minor third, which is the last interval of the first six-tone pattern is the first of the second pattern. The remaining five intervals of the second pattern are the same and occur in the same order as the first five intervals of the first pattern.

The relationship between these two groups is, of course, the sort which exists among the various chromatic patterns. These relationships among the patterns as well as relationships which we will discuss later between the patterns and the smaller melodic groups, and between these smaller groups and their pitch levels are more clearly explained with the aid of figures 4 and 5. Figure 5 indicates the intervals of the F series, which, we will remember is the one being used in this section of the Lamentatio. Each of the points marked in the periphery of the circle indicates a half step. The numbers refer to the notes of the series in its original form, which, we remember, are F-G-A-B flat-D flat-E flat. The series in its original form is also considered, as we said earlier, as the first of the chromatic modes or patterns. Hence we shall call it chromatic pattern 1 or simply pattern 1. The number 1 in the figure, then, refers to the first note of the first chromatic pattern, 2 to the second, etc. And thus the distance between the first two notes is two half steps or one whole step. Now if this circle is placed on the other (fig. 4) with the "1" coinciding with the F, the number 2 will be opposite the note which would be second in pattern 1 and the other numbers likewise. If the number 2 is placed opposite the F, the remaining numbers will point to the notes which are needed to complete chromatic pattern 2. Thus by placing the six numbers opposite F, the six chromatic patterns are formed.

If we now consider the first two six-tone patterns of the piece with respect to these figures, we see that the first one is a pattern 6, while the second is a pattern 4. Now if, on figure 5, we start with number 6 and proceed clockwise to number 5 observing the succession of intervals, and then do the same thing in starting with number 4, we will see exactly what the intervallic likenesses and differences are between the two patterns. Thus, for example, we see that the two patterns share the succession 6-1-2-3. And thus we see that pattern 4, ending as it does on 3, lacks the half step between 3 and 4, while pattern 6, since it ends on 5, lacks the whole step between 5 and 6.

The relations among the patterns are illustrated in a slightly different way in figure 6. On each of the parallel horizontal lines, points are marked off representing the twelve tones of the chromatic scale starting on the left with F. The top line is so numbered as to form chromatic pattern 1. The next line down has the 2 shifted over to F to form chromatic pattern 2. This process is continued through the six lines to form the six chromatic patterns. Comparing patterns 4 and 6 we can observe here as well as on the circle the relationships between the two which we just pointed out.

We will now with the aid of these circles examine the relations between the six-tone patterns in this phrase and the melodic group of three tones which we called melodic group 1. This group, we remember, has occurred three times in this

Fig. 4

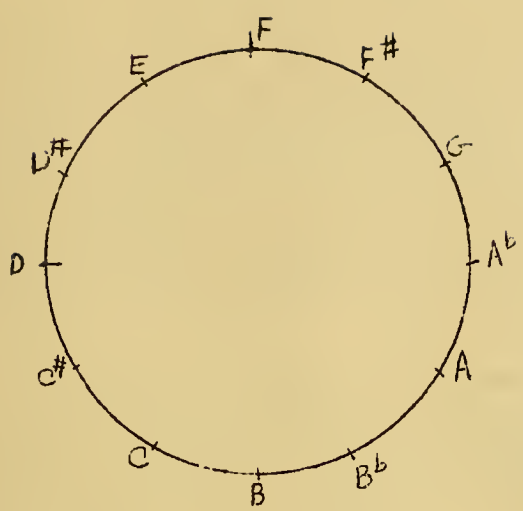


Fig. 5

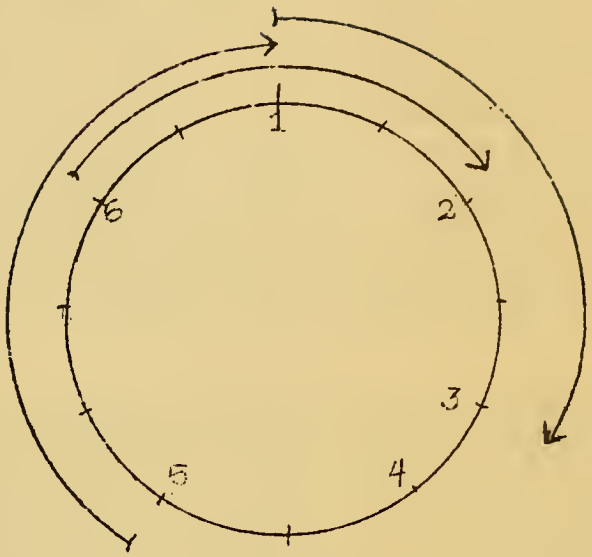
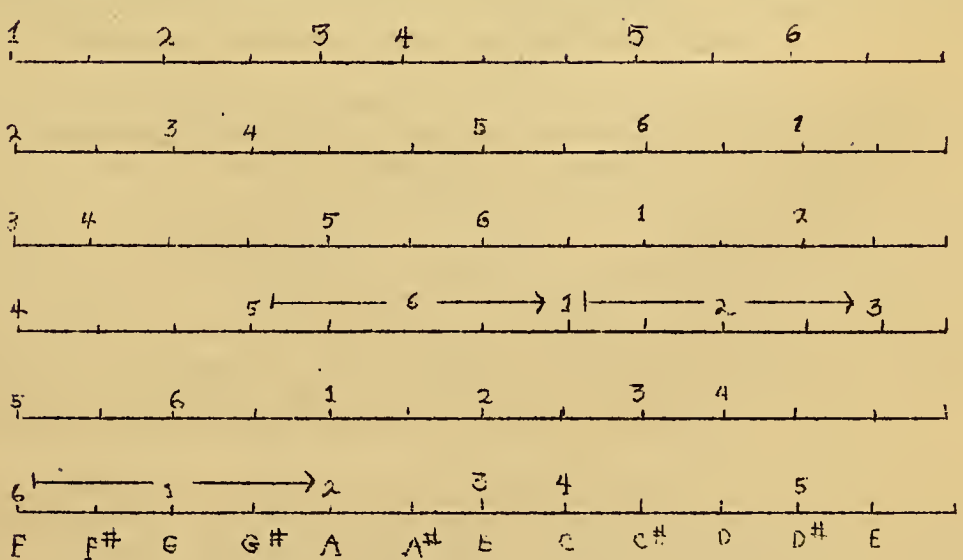


Fig. 6



phrase, in the groups F-G-A, A flat-B flat-C, and C-D-E. Now when we consider each of the groups in relation to its six-tone group, we see that each group has a different melodic context within its pattern, and that each has a different relative position within its pattern. If we check figure 5, we shall see in which segment of the circle each one appears, where it occurs within its six-tone pattern, and also why it is on its particular pitch level.

The piece begins, we remember, with chromatic pattern 6. Thus, as we soe on the circle, the first three notes are 6, 1, and 2 (6-1-2), forming two whole steps. The group A flat-B flat-C occurs in chromatic pattern 4 on 5-6-1 and, consequently, as the second, third, and fourth steps of the pattern. The group C-D-E occurs on the fourth, fifth, and sixth steps of the same pattern and thus on numbers 1-2-3. These three examples of melodic group 1, then, occur on three different segments of figure 5. (Arrows mark off each of the segments on figure 5.) As a result each of the groups occurs within a different context of intervals. Thus we see that a group of the type 6-1-2 (F-G-A) is followed by a whole step and a half step, while a 5-6-1 group such as A flat-B flat-C is followed by two whole steps. And thus also we see that the 5-6-1 group is preceded by a minor third, while the 1-2-3 group is preceded by a whole step.

The intervallic context of a particular example of melodic group 1 depends, not only on which succession of two whole steps it is (5-6-1, 6-1-2, or 1-2-3), but also on the position of this succession within a six-tone pattern. This shows up clearly in figure 6. Thus, for example, observing group 6-1-2 as it occurs in patterns 3,4,5, and 6, we see that in the respective patterns it is followed by no interval, by one, by two, and by three intervals and is preceded in the respective patterns by three, by two, by one, and by no intervals. The positions of the three types of melodic group 1 within their six-tone patterns which are exemplified in the three groups F-G-A, A flat-B flat-C, C-D-E are indicated by means of arrows in figure 6.

The pitch level of a particular type of melodic group 1 is, of course, determined by its position within the six-tone pattern. This is illustrated in figure 6 by the three groups which we have been discussing. Of the three the 6-1-2 group is the lowest, occurring as it does at the beginning of a pattern, while the 5-6-1 and the 1-2-3 groups in pattern 4 are increasingly higher.

The other two phrases of the piece we will not analyze in detail. As is shown by the markings, the groups used in the first phrase continue to be used throughout the piece in various forms and combinations. In addition several new groups develop. One such new group which we will call rhythmic group 4 consists of five notes in even progression. The sign ⌣ placed below the melody indicates this group. (We will notice that it has already occurred within the second pattern of the piece.) Three new melodic groups develop these being in the order in which they first occur, a two-tone group which skps upward a sixth or a seventh, a descending five-tone group (this group occurs in ascending whole steps in the second six-tone pattern of the piece) and a descending four-tone group. The four- and five-tone groups are marked by the sign ⌐——¬ above the melody.

In the treatment of melodic and rhythmic groups in this piece we find many such similarities to the chant as we have already observed in the Webern and the Schoenberg. We find rhythmic groups here, as in the Schoenberg, treated in much the same fashion as were the melodic groupings in the chant. Thus, for example, we observed in the seven-note rhythmic group of the first phrase a rhythmic group 1 varied rhythmically from its original form and repeated before it was combined with rhythmic group 2 to form a variation on rhythmic group 3. Another variation of rhythmic group 3 by the recombination of its parts occurs at the beginning of

the second phrase (E to A flat) where the order of rhythmic groups 1 and 2 is reversed. This dissociation and recombination of groups so characteristic of the chant is further illustrated here as in the Schoenberg in the combination of rhythmic and melodic groups. We have already observed the point in phrase 1 (B flat-A-G) at which rhythmic group 1 is for the first time separated from melodic group 1 to be combined with melodic group 2. The same sort of variation happens at the beginning of the second phrase (E-D-C), where rhythmic group 2 is combined with melodic group 1 (in its retrograde form) for the first time. This co-exstensiveness between rhythmic and melodic groups is not such a characteristic feature of this piece, however, as it was of the Schoenberg quartet.

The process which we observed especially in the chant and in the Schoenberg of building up melody groups through the combination of smaller units is carried out in this piece more completely than it has been in any of the others. The process is illustrated in melodic groups 1 and 2 and in the four-tone and five-tone melodic groups. The first step is the establishment of the two three-tone groups, melodic groups 1 and 2. These are made up of half tones and whole tones. Built up from the three-tone groups are the descending four-tone groups which contain either three whole steps or a half step and two whole steps. Each can be considered either as a combination of two overlapping three-tone groups or as one three-tone group plus a half of a whole step. The descending five-tone melodic group is composed of either four whole steps or of a half step plus three whole steps. If it has four whole steps it is a compound of two melodic groups 1, while if it has a half step plus three whole steps, it is a melodic group 1 plus a melodic group 2.

These several melodic groups plus the skip upwards of a sixth or a seventh constitute almost entirely the motivic material of the piece. It will be remembered that in all the other pieces analyzed the motives were more sharply differentiated from one another than these. The Schoenberg melodic units, for example, each possessed a distinctive combination of intervals, while the Graduale, having few intervals, made use of the possibility of variety in direction to produce distinctive melodic groups. Here, on the other hand, of the various groups just discussed, none can be distinguished sharply from the others. The smaller groups often appear as parts of larger groups, and the larger groups always emerge not only as units, but also as sums of their parts. The existence, for example, of two kinds of three-, four-, and five-tone groups draws attention to the difference between the two kinds of groups, and hence to the various groups within. Likewise, the placing together, for example, of a five-tone group and a three-tone group reveals the presence within the five-tone group of three-tone groups.

This discussion brings us to the question of the function of the six-tone patterns. We have observed that these six-tone patterns exist as recognizable melodic units and, at the same time, as combinations of smaller melodic groups. This is the very characteristic which we have just found in the four- and five-tone melodic groups. Now if we consider in the Webern and the Schoenberg the function of the twelve-tone series, we find no such close relationship between the series and the smaller groups as that which we found between the six-tone pattern and the smaller groups. The series in the Schoenberg is simply the sum of its four melodic units, while the Webern series is actually almost the same as any of its three parts. Compared to the twelve-tone series, then, the six-tone pattern is a restricted selection of intervals, the possibilities of which are revealed through the use of various groupings of these intervals and through the chromatic patterns with their special sort of recombination of all the available intervals.

We shall now make a brief study of the three-part canon "Viae Sion," on page 3 of the Lamentation (Ex. 41) in order to see what polyphonic uses are made of the six-tone patterns. In the soprano and alto parts a chromatic pattern on B alternates with a chromatic pattern on F. Since the imitation is at the diminished fifth, the soprano starts with a B pattern and the alto with an F pattern. The tenor part imitates the alto a fourth below on C in a retrogade inversion of a chromatic B pattern, and alternates this pattern with the F chromatic pattern.

The harmonic phenomena resulting from this process are much the same in nature as the melodic phenomena in the "Jerusalem." Here, as there, characteristic combinations of notes are found. And again these combinations are not sharply distinguished from one another, but shade gradually into one another. We have again, then, a variety of groups which are closely related to one another and yet which, at the same time differ subtly from one another. This variety of closely related groups is caused by the varying relationships which exist between the chromatic patterns of the different voices. The likenesses between these vertical groups, then, are due mainly to the limitation of the tonal material which results from the fact that only three patterns are used and that of the three one (the F pattern) is present in all three voices, while one (the B pattern) is present in two voices, and one (the C pattern) is present in only one voice. The notes occurring most frequently in vertical combinations are those which make up the more frequently sounded patterns and those which occur in several patterns. Thus we find most often in combination the notes D, E, G sharp, and A sharp, which occur in chromatic patterns F and B, and we find almost as often the notes F and C, which both occur in patterns F and C. The variety of ways in which these notes are combined with one another is a result of the fact that the patterns are used melodically and that therefore the vertical combinations vary as the positions of the patterns of the various voices vary with relation to one another. On Ex. 41 we have enclosed with dotted lines several vertical groups which contain these more frequently sounded notes in various combinations with one another.

These harmonic or vertical groups are like the melodic groups of the "Jerusalem" in that they form a variety of combinations from a limited number of intervals. Both the harmonic and the melodic groups form a decided contrast to the three-tone harmonic and melodic units in the Schoenberg with their definite pre-established combination of intervals and length.

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In these pages we have examined in some detail the complex transformation and interworkings of small elements of design as they make up these few examples of Gregorian chant and music written in the twelve-tone technique. We have seen that the basic principle of design for these two kinds of music which are different in so many ways is actually the same, and that underlying the complexities of tonal material, of rhythmic values, and of the vertical combinations of melodies are the small design elements, combining as they did in the chant with variations of all kinds to make up the whole.

Hamline Studies in Musicology

ERRATA

page 3, line 26: Jeppesen instead of Jeppeson

page 7, second line of the Latin text: insert *l* into the empty parenthesis ( )

page 12, footnote 33: p. 9 instead of p. 11

page 30, footnote 54: page 60 ff. instead of page 88 ff.

page 34, line 13: (page 40) instead of (page 56)

page 57, footnote 17: Denkmäler instead of Denkmaler

- - footnote 19, line 3: Denkmäler instead of Denkmaler

- - - - - line 14: Busnois instead of Bunnois

- - - - - - - after Caron. eliminate: i

page 92, line 9: "mode" instead of "mode